

Institutionen för Social- och Rättsspsykiatri,
Lunds Universitet, Lund

AN EPIDEMIOLOGICAL INVESTIGATION OF ALCOHOLISM IN A TOTAL POPULATION; THE LUNDBY STUDY

ALKOHOLISM I LONGITUDINELLT PERSPEKTIV

En epidemiologisk undersökning av förekomst,
insjuknanderisk och långtidsförlopp
inom Lundbykohorten

av

Leif Öjesjö



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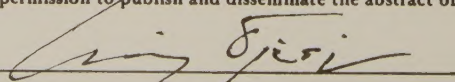
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Abstract The thesis presents empirical base-lines from life history interviews and records for assessing the prevalence, the incidence, and the long-term outcome of alcoholism and heavy drinking among males in the general population (the Lundby 1947 cohort, N = 2,550) followed during 25 years. The point-prevalence of alcohol abuse and alcoholism on the cross-section day of July 1, 1972, was 9.5 % (dependency syndromes 6.2 %). The type and the severity were found to have different patterns for different demographic subgroups. The annual age-standardized and prospectively measured incidence rate based on approx. 15,000 observation years for the period 1957-1972 was 300 per 100,000. The individual expectancy (morbidity risk) was 19.3 %. The cumulated probability was manifested before 40 years of age in 80 % of the cases. It is the first time this has been shown in the epidemiological literature through calculation from an entire population. The findings give support for a higher incidence in the working class than in other social classes. Finally, from a follow-up study of earlier defined alcoholics in the cohort retrospectively-prospectively observed through 15 years, alcoholism as a dependency syndrome was confirmed to be a valid working model for epidemiological use. The long-term outcome was that 30 % were recovered, 43 % were unchanged or worse, and 27 % had died.		
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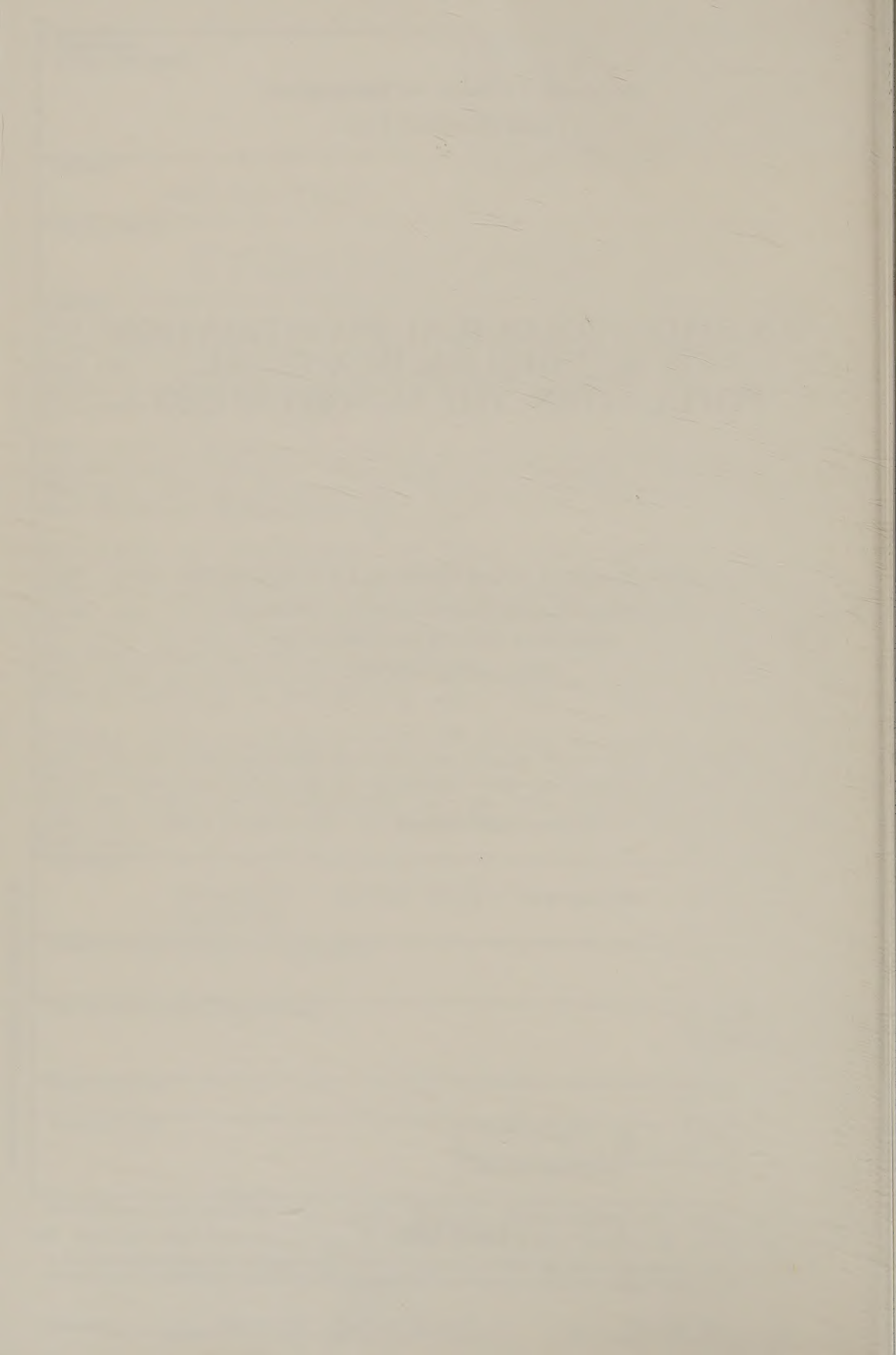
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- I Öjesjö, L. and Hagnell, O.: Prevalence of male alcoholism in a cohort observed for 25 years. Scand. J. Soc. Med. 8:55-61, 1980.
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- III Öjesjö, L.: Prevalence of known and hidden alcoholism in the revisited Lundby population. Social Psychiatry 15:81-90, 1980.
- IV Öjesjö, L., Hagnell, O. and Lanke, J.: Incidence of alcoholism among men in the Lundby community cohort, Sweden, 1957-1972. J. Stud. Alcohol 43, 11:1190-1198, 1982.
- V Öjesjö, L., Hagnell, O. and Lanke, J.: Class variations in the incidence of alcoholism in the Lundby Study, Sweden. Social Psychiatry 18:123-128, 1983.
- VI Öjesjö, L.: Long-term outcome in alcohol abuse and alcoholism among males in the Lundby general population, Sweden. Brit. J. Addiction 76:391-400, 1981.

Som referenser anges arbetenas romerska siffror.



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FÖRORD

Undersökningarna har utförts inom ramen för Lundbyprojektet vid Institutionen för Social- och Rättspsykiatri vid Lunds Universitet under ledning av professor Olle Hagnell. Databehandlingen har skett i samarbete med byrådirektör Leif Robertsson, Lunds Universitets Datacentral. Docent Jan Lanke, Statistiska Institutionen, har svarat för de statistiska riskberäkningarna.

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1. INLEDNING, FRÅGESTÄLLNINGAR

Syftet med avhandlingen är att genom olika epidemiologiska analysmetoder försöka beskriva utbredningen av medicinsk alkoholism i en definierad kohort svenska män. De inledande arbetena (I, II, III) är deskriptivt orienterade. Fynden jämföres med tidigare undersökningar från samma population (12), men studierna är samtidigt en introduktion till analysen av våra longitudinella data (IV, V, VI). Syftet har här varit att ta fram information ("base-lines") för att möjliggöra riskberäkningar och öka kunskapen om förlopp och orsakssammanhang på alkoholepidemiologins område.

Bakgrunden är att totalkonsumtionen i Sverige av alkohol per individ har ökat under de senaste årtiondena (från 5,64 l 100-procentig alkohol 1964 till 7,32 l 1970 och 8,11 l 1976). Medicinska och sociala alkoholskador har likaledes ökat under perioden (23, 30). Å andra sidan synes priser, lagstiftning och vårdformer på alkoholområdet inte ha förändrats särskilt mycket under motsvarande period. Ur metodologisk synpunkt är detta en fördel, enär vi härigenom får mindre confounding-effekter vid analysen av resultaten.

Inom ramen för en befolkningsundersökning som Lundbyprojektet, vilket är inriktat på att studera psykisk sjukdom, men även alkoholism, psykosomatiska och andra sjukdomar, kan vi beräkna en form av riktvärden vad gäller prevalens (tvärsnitt), incidens (nya fall) och förväntad risk. Vi kan även jämföra dem som får en sjukdom med dem som inte får ifrågavarande sjukdom med avseende på data om förhållanden för tiden före insjuknandet.

Prevalensundersökningar ger kunskap om sjukdomarnas utbredning vid en viss tidpunkt. Sådan information är värdefull för vårdplanering men mindre vägledande vid förebyggande arbete, där det krävs kunskap om orsakerna till sjukdom. Man måste här studera utvecklingsförlopp under en längre tidsperiod. Genom att göra flera "mätningar"

kan man fånga upp olika sekvenser i utvecklingen. På så sätt kan också missbrukskarriären belysas ur ett längre perspektiv, inkluderande det utvecklingsförlopp som föregår själva missbruket.

De metoder som står den psykiatriska epidemiologin till buds är olika slag av register- och fältundersökningar, intervjuer och frågeformulärsundersökningar, eventuellt också kompletterat med screening med olika laboratorieprov. Den viktigaste informationen kan emellertid förväntas komma från så allsidiga studier som möjligt, där fältundersökningar kombineras med registerdata, och där tvärsnitts- och längssnittsundersökningar kan jämföras inbördes.

Avhandlingens frågeställningar är främst:

- A. Vilken är prevalensen i den ursprungligen av Essen-Möller et al. 1947 beskrivna kohorten av svårare alkoholmissbruk och alkoholism i medicinsk mening 1972?
 - Hur är prevalensen i olika åldersgrupper?
 - " " " " " sociala grupper?
 - Hur stor är den s k dolda alkoholismen?
- B. Vilken är incidensen och risken för insjuknande i alkoholism?
 - Kan "base-lines" beräknas i olika åldersgrupper?
 - Som årlig incidens?
 - Som risk upp till en viss ålder, inklusive hela livet (kumulerad livsrisk)?
 - Kan olika riskgrupper påvisas, t ex de med olika utbildning, yrke och social klass?
- C. Hur är alkoholismens långtidsförlopp?
 - Hur mycket betyder ett utvecklat beroende till alkoholen för långtidsförloppet?
 - Vilka har blivit bättre med avseende på missbruket?
 - " " " sämre med avseende på missbruket?
 - " har avlidit och därav rimligen till följd av alkoholmissbruk?

2. MATERIAL OCH METODIK

2.1. Lundbypopulationen

Materialet utgörs av den del av Lundbypopulationens män som kunnat följas genom samtliga tre fältundersökningar 1947, 1957 och 1972. Denna del kallas i fortsättningen 1947-årskohorten. Essen-Möller och medarbetare beskrev ursprungligen de 2.550 personer (1.312 män, 1.238 kvinnor) som den 1 juli 1947 var skrivna i ett område bestående av två socknar i Malmöhus län, här kallat Lundby (8). Hagnells uppföljning 1957 (10) skedde oberoende av om personerna bodde kvar eller om de flyttat. Beträffande dem som avlidit gjordes en undersökning, som så långt möjligt motsvarande de övrigas. Anhöriga, eller andra som väl kände den döde, intervjuades, informationer från journaler, läkare m m inhämtades. Bortfallet kunde i såväl Essen-Möllers som Hagnells undersökningar hållas synnerligen lågt (ca 1 %).

År 1972, 25 år efter den första och 15 år efter den andra undersökningen studerade Hagnell och Öjesjö samtliga probander som ingått i 1947 och/eller 1957 års undersökningar, även nu med obetydligt intervjubortfall (2 %), se tabell 1 (9).

Hälften av de levande i 1947-årskohorten bodde kvar i ursprungsområdet, hälften hade flyttat, därav 1/5 till storstad (mer än 100.000 inv.), övriga till andra tätorter (se tabell 2 och 3). Under de 25 åren har skett en stark urbanisering av den ursprungliga Lundbypopulationen, där lantbefolkningens andel minskat (bönder, lantarbetare, hantverkare, småföretagare) medan andelen fabriksarbetare och service- och administrativt anställda ökat. Populationens demografiska struktur har härigenom alltmer kommit att likna en svensk genomsnittsbefolknings (29).

2.2 Metodologisk uppläggning

Undersökningen har givits en kombinerad tvärsnitts- och retrospektiv-prospektiv longitudinell uppläggning för att bäst kunna svara mot frågeställningarna.

Beräkningarna har gjorts på följande delkohorter ur 1947-årskohorten av Lundbypopulationen:

- 2.2.1 Prevalens. För prevalensundersökningen (I, II, III), som ger information om problemets storlek vid en viss tidpunkt (den 1 juli 1972), har beräkningen gjorts på de män ur 1947-kohorten som fortfarande levde vid tillfället.
- 2.2.2 Incidens. För incidensundersökningen (IV, V) har beräkningarna gjorts på de män ur 1947-kohorten, som levde den 1 juli 1957, och som då saknade tecken på alkohol-sjukdom eller missbruk, och som sedan kunnat följas under en 15-årsperiod fram till den 1 juli 1972.
- 2.2.3 Uppföljning. För uppföljningsundersökningen (VI) av långtidsförloppet har de män ur 1947-kohorten studerats som levde inom ursprungsområdet den 1 juli 1957, och som före detta datum utvecklat tecken på alkohol-sjukdom och/eller missbruk, och som sedan kunnat följas under en 15-årsperiod fram till den 1 juli 1972.

2.3 Fältarbetet

Till skillnad från andra befolkningsundersökningar har intervjuer och observationer i denna undersökning gjorts av läkare med klinisk erfarenhet i psykiatri och alkoholvård (i 1972-undersökningen av särskilt LÖ och OH). Intervjuerna har tagit ca en timme och varit relativt fria men fokuserade på den psykiska hälsan och på allmänmedicinska frågor och missbruksfrågor. Individernas sociala livssituation (familjeförhållanden, arbete, bostad) har ägnats särskild uppmärksamhet. Intervjumetodiken har varit den gängse inom psykiatriskt arbete, där god kontakt är nödvändig och fri framställning är

Önskvärd, gärna med den undersöktes egna ord och egna upplevelser illustrerade. Likaså har försök gjorts att beskriva psykiskt status vid observationstillfället. Detta status har dels följt en förut uppgjord mall, dels gjorts som en fri beskrivning av probanden och hans miljö.

Tryckta förkortningar av 'nyckelordet' i frågeställningarna fanns på ett kort, som den intervjuande läkaren medförde som stöd för minnet vid fältarbetet. Ett sådant förtryckt kort fyllde undersökaren sedan i för varje proband. Typen av information som skulle inhämtas har således varit bestämd på förhand, men man har försökt möta varje proband på det sätt som ansetts vara lämpligast i varje enskilt fall. Informationen från fältarbetet, d v s mestadels från hembesök hos probanderna, har kompletterats med tillgängliga uppgifter ur andra källor och register, varefter klassifikation och utvärdering har gjorts av varje individ med hänsyn till psykisk och somatisk sjukdom, förekomst respektive icke förekomst av alkoholism, dess svårighetsgrad och duration m m.

2.4. Kompletterande informationer

Övriga informationer har hämtats från följande källor:

Folkbokföring, kyrkobokföring
 Statistiska Centralbyrån (SCB)
 Försäkringskassa
 Kriminalregister
 Länsnykterhetsnämnder
 Sjukhusjournaler, psykiatriska
 Sjukhusjournaler, övriga
 Key-informants
 Officiella dödsattester
 Obduktionsprotokoll
 Postenkät

2.5. Definitioner

I undersökningen har använts samma klassifikationer av alkoholism som tidigare av Hagnell och Tunving (12):

- A. Storförbrukare med en ökad tolerans för alkohol och/eller
- B. Ändrat beteendemönster:
 - 1. Merbegär
 - 2. Återställarbehov
 - 3. Minnesluckor

Utifrån dessa klassifikationer gjorde vi följande indelning:

- I Alkoholmissbrukare;
- II Alkoholmissbrukare med ett beroendeförhållande till alkoholen (minst två av de tre symptomen som beskrivits under B.);
- III Kroniska alkoholister = individer med minst två av de tre beskrivna symptomen under B. plus medicinska följsymptom såsom levercirrhos, nervskador eller hjärnskadetecken.

Grupperna II och III betecknar vi som alkoholsjuka eller synonymt alkoholister i medicinsk mening (6, 24). Genom att tillämpa ovan nämnda definitioner kan vi granska alkoholismen epidemiologiskt, d v s med hänsyn till dess utbredning i befolkningen. Enligt Kaij är det medicinskt riktigt att undvika att dra skarpa gränser mellan grupperna, "eftersom alkoholmissbruk inte utgör en sjukdomsbeskrivning i sig självt, utan kan vara symptom på en sjukdom" (15).

2.6. Bortfall och andra felkällor

Medverkan vid intervjuundersökningen 1972 var 98 %. Tack vare tillgången till registerdata m m blev bortfallet vid den slutliga utvärderingen mindre än 1 % (se tabell 1).

I undersökningarna har eftersträövats en så likartad metodik som möjligt genom åren. Datainsamling via proban-

der medför emellertid många problem, särskilt gäller detta när man via frågeformulär och intervjuer försöker samla in uppgifter om exempelvis psykisk sjukdom och alkoholproblem. Till följd av det stigma som, om än inte så uttalat nu som för några decennier sedan, huvuddelen av befolkningen lägger vid dylika fenomen, döljs de omedvetet eller medvetet såväl av individen själv som av hans omgivning. Läkare å andra sidan har en tendens att negligera det som kanske är den egentliga orsaken till sjukdomen (exempelvis alkoholen) genom att ställa en somatisk symptomdiagnos som rygg- och muskelsmär, magbesvär o dyl (11).

Forskare som vistas i ett undersökningsområde genom eget fältarbete under lång tid får självfallet en alltmer ingående kännedom om probanderna. Detta är särskilt viktigt när det gäller problem som alkoholism, där det inte är realistiskt att vänta sig att få pålitliga svar på direkta frågor. Vidare är det ofrånkomligt, att informationen blir något ojämn kvalitativt och kvantitativt. Vissa probander har exempelvis påträffats oftare än andra (i många fall även när de varit påverkade). Möjligheterna att använda 'key-informants' har minskat. I stället har i allt större utsträckning använts kompletterande uppgifter ur de officiella registren med den bias detta innebär, vad gäller eventuell selektiv social snedrekrytering från 'lägre' socialgrupper.

2.7. Bearbetning och statistik

För alla personerna inom 1947-kohorten finns nu utvärderingar som grundar sig på den samlade informationen från olika källor. Diagnostik och klassifikation har utförts av LÖ och OH. Överensstämmelsen i det diagnostiska förfarandet har jämförts och visat sig påfallande hög vad gäller bedömningen av den relativa förekomsten av störningarna. LÖ har sedan under hand kompletterat materialet och fördjupat analysen, särskilt vad gäller bakgrundsuppgifterna

Erhållna individbundna data har sammanställts för såväl datamaskinell som manuell bearbetning. Detta material har kodats, förts upp på hålkort och sedan registerförts på databand. I datorn finns sålunda informationen samlad och ackumulerad på sådant sätt att den, med tillstånd från Datainspektionen, är tillgänglig för databearbetning av hela 25-årsperioden 1947-1972.

Resultaten från tvärsnitts- och uppföljningsundersökningarna har redovisats med tabeller som syftar till översiktlighet och tydlighet, vanligen med de faktiska observationerna och deras procentuella motsvarighet angivna, i tillämpliga fall kompletterade med signifikans-test. Riskberäkningarna i form av årlig incidens, sannolikhet för insjuknande inom ett 10-årsintervall eller kumulativ sannolikhet upp till en viss ålder, eventuellt hela levnadsloppet, har gjorts med hjälp av dator enligt en statistisk metod som utarbetats av docent Jan Lanke (IV). Vid dessa riskberäkningar har alla som vid skärningsdatum den 1 juli 1957 företett symptom på alkoholmissbruk eller alkoholsjukdom tagits bort. Därefter valdes att göra incidensberäkningar på de probander som debuterat med nya symptom på alkoholism under den följande 15-årsperioden 1957-1972.

Under 10-årsperioden 1947-1957 och vid fältundersökningarna 1957 och 1972 erhöles ett rikhaltigt material för en evaluering av alkoholism och andra psykiska sjukdoms- och abnormtillstånd. Uppgifterna från tvärsnittsundersökningen 1947 är däremot mera osäkra beroende på att undersökarna då var medvetet försiktigare med att fråga om alkoholmissbruk. Retrospektiva intervjuuppgifter är alltid mera otillförlitliga (på grund av glömska, bortträngning etc hos de intervjuade).

Beträffande nya kvinnliga alkoholister (några enstaka fall) har antalet ansetts vara för litet för att bli föremål för en meningsfull statistisk beräkning. För männen har alla förstagångsfall av medicinsk alkoholism och/eller svårare missbruk registrerats under den

aktuella 15-årsperioden (41 män, varav 20 betecknats som alkoholberoende och/eller kroniska alkoholister). De kumulativa risksiffrorna bygger på stora bastal (approx. 15.000 observationsår under risk), ehuru under vissa villkor, nämligen 1) sannolikheten under livet att debutera i missbruk och alkoholsjukdom, förutsatt att personen lever till den angivna åldern, samt 2) att förhållandena under de 15 åren har varit likartade. Insjuknanderisken har satts konstant inom 10-årsåldersklasserna, och sedan har var och en av de åldersspecifika intensiteterna $\mu_1, \mu_2, \dots$ skattats. En sådan intensitet kan skattas genom att man beräknar kvoten antalet insjuknade genom personår under risk. Härvid är en person under risk så länge han lever, finns kvar i den aktuella åldersklassen och ännu inte har debuterat i alkoholism. Om vi använder N_j och L_j som beteckningar för antalet insjuknanden resp. personår under risk i åldersklass j , skattas alltså μ_j med N_j/L_j , och man kan visa att medelfelet ges av $d(\mu_j) = \mu_j/\sqrt{N_j}$. Att dessa skattningar ger oss möjlighet att utnyttja materialet optimalt beror dels på att härigenom kommer varje person i undersökningen att bidra till alla skattningar som han rimligen kan ingå i, dels utnyttjar vi att vi beträffande de insjuknade inte vet enbart att de insjuknat, utan även när det har skett.

3. RESULTAT

3.1. Delarbete I: Prevalens av alkoholism

Syftet har i första hand varit att beskriva materialet och ge en inledande orientering om alkoholismens utbredning i en definierad population. Endast 3 kvinnor (0,3 %) kunde klassificeras som alkoholmissbrukare/alkoholister på skärningsdatum, varför beräkningarna fortsättningsvis gäller männen. Prevalensen i 1947-kohorten av alkoholmissbruk och alkoholsjukdom totalt bland de män som levde på skärningsdatum den 1 juli 1972 var 9,5 %. Alkoholberoende var 2,8 % och kroniska alkoholister 3,4 %,

således alkoholister i medicinsk mening sammanlagt 6,2 %. Alkoholmissbrukare kan ses som en form av gränfall och utgjorde 3,3 %.

Olika åldersgrupper befanns ha olika fördelning vad gällde typen av alkoholism, som den definierats i undersökningen. Missbrukare utan beroendetecken var vanligast i åldrarna 30-39 (4,7 %) och 70+ (4,9 %). De som utvecklade beroende till alkoholen var relativt jämnt fördelade över åldrarna 30-70 år (ca 3 %). Den kroniska alkoholismen ökade med åldern från 0,7 % i gruppen 25-29 till 6,8 % i gruppen 50-59. Högst frekvens av alkoholmissbruk och/eller alkoholsjukdom fanns i åldersgruppen 50-59 (12,9 %).

Svåra fall med medicinska komplikationer visade en antydning till ökning under perioden 1957-1972 (från 1,8 % till 3,3 %), mest tydlig inom åldersgruppen 50-59 (från 1,1 % till 6,8 %). Bortfall i kohorten genom dödlighet och överdödlighet bland alkoholmissbrukarna och de medicinska alkoholisterna gör att prevalenssiffrorna måste ses som en form av minimumtal. Antalet män med medicinsk alkoholism i 1947-kohorten har uppskattats till totalt 122. Under 25-årsperioden 1947-1972 avled 32 av dessa, d v s ca 25 %. Dödligheten i de olika undergrupperna missbrukare/beroende/kroniska alkoholister har speciellt studerats i Delarbete VI, se även nedan under rubriken 4. Diskussion.

3.2. Delarbete II: Sociala faktorer

Syftet med denna delstudie har varit att beskriva yrke, socialklass och sysselsättning för alkoholisterna ur 1947-kohorten på skärningsdatum den 1 juli 1972. Frekvensen av missbruk och medicinsk alkoholism var vid tidpunkten sammantaget 8,2 % för de sysselsatta och 13,9 % för de icke sysselsatta. Skillnaden mellan grupperna är signifikant på 2%-nivån. Markanta skillnader kunde vidare som väntat konstateras mellan olika undergrupper utanför arbetskraften, särskilt de förtidspensionerade och de arbetslösa männen hade höga andelar (ca 1 av 4).

3.3. Delarbete III: Dold alkoholism

Totalt påvisades 90 av de 952 männen uppfylla kriterierna för missbruk och/eller alkoholsjukdom vid tvärsnittsundersökningen den 1 juli 1972. Fördelningen av "kända" (registrerade av myndigheterna) och "dolda" (ej registrerade av myndigheterna) fall jämfördes. Vi fann, att 47 probander var kända i de psykiatriska registren, 48 probander var kända i nykterhetsregistren, och 17 probander återfanns i kriminalregistret dömda för ratt-onykterhetsbrott. Totalt var 69 av de 90 probanderna i populationen kända av myndigheterna, d v s över 70 %. Som nämnts ovan (3.1.) måste givetvis även här dödligheten tagas med vid bedömningen av fynden.

3.4. Delarbete IV och V: Incidens och sannolikhet för insjuknande i alkoholism

Sannolikheten att någon gång under livet utveckla svårare alkoholmissbruk och/eller alkoholsjukdom, beräknat på de män ur 1947-kohorten, som insjuknade under perioden 1957-1972 (approx. 15.000 observationsår under risk), var $19,3 \% \pm 2,9 \%$. Sannolikheten att utveckla ett alkoholberoende och/eller en kronisk alkoholism någon gång under livet uttryckt i procent var $8,6 \pm 2,0 \%$.

Antalet nya fall per år har beräknats till 300 per 100.000 totalt (därav alkoholberoende 130 per 100.000). Den högsta årsincidensen fanns i åldersgruppen 10-19 år (680 per 100.000), och den kumulerade sannolikheten före 40 år var $15,1 \pm 2,7 \%$. Före 30 års ålder fanns alkoholmissbruk och/eller alkoholsjukdom utvecklad hos 60 %, och före 40 års ålder hos ca 80 % av fallen. En viss ökning av incidensen påvisades även efter 60 års ålder (IV).

Resultaten antyder vidare en högre incidens och livsrisk för arbetare och lågutbildade (årlig incidens totalt 340 per 100.000, kumulativ livsrisk 35 %) än för övriga sociala grupper vad gäller svårare missbruk och/eller alkoholsjukdom (V).

3.5. Delarbete VI: Långtidsförlopp vid alkoholism

Bland de män ur 1947-kohorten, som levde kvar i undersökningsområdet 1957, påvisades 96 fall av alkoholism och/eller svårare alkoholmissbruk på skärningsdatum den 1 juli 1957. Dessa har studerats retrospektivt-prospektivt under 15-årsperioden t o m den 1 juli 1972.

Vi fann att 43 % fortfarande hade konstaterbara tecken på pågående missbruk och/eller var aktuella hos olika vårdinstanser, medan 27 % (25 av 96) hade avlidit. Dödsorsakerna utgjordes av hjärt-kärlsjukdomar (14 av 25), mag-tarmsjukdomar (4 av 25), infektionssjukdomar (3 av 25), suicid (2 av 25) och olycksfall (2 av 25). 4 av fallen kan sägas ha avlidit i förtid, d v s före 65 års ålder (1 suicid, 1 olycksfall, 1 hjärtfibros, 1 andningsinsufficiens). Se tabell 4.

Kroppssjukdomar av långvarig art kunde konstateras hos 80 % (76 av 96). Vanligast var led-muskelsjukdomar (35 %), hjärt-kärlsjukdomar (33 %), mag-tarmsjukdomar (33 %), därav kända ulcus i 18 fall (19 %), leversjukdomar i 6 fall (6 %) och cancer i digestionskanalen i 5 fall (5 %). Neurologiska åkommor (främst polyneuriter) påvisades i 3 fall (3 %).

Gynnsammaste förloppet konstaterades hos de fall som vid början av observationsperioden ännu inte hade utvecklat något beroende. Av dessa var 60 % symptomfria vid uppföljningen. Sämst förlopp hade de fall som redan 1957 klassificerats som kroniska alkoholister i medicinsk mening. Endast hälften av dessa var i livet efter 15 år, och ingen hade kunnat upphöra med missbruket. De som varit klassificerade som beroende alkoholister men varit utan objektivet påvisbara skador intog en mellanställning, där ca 10 % hade upphört med missbruket efter 15 år.

4. DISKUSSION

Undersökningen gäller en definierad sydsvensk totalpopulation, som studerats under en bestämd tidsperiod. Mate-

rialet avspeglar således den befolkningssammansättning som Sverige hade för 20 år (incidensundersökningen) respektive 10 år sedan (prevalensundersökningen). Under de år befolkningen i detta "epidemiologiska laboratorium" följts kontinuerligt, har kohorten åldrats så att den yngste vid uppföljningen den 1 juli 1972 hade hunnit fylla 25 år. Detta medför, att det finns förhållandevis fler äldre personer i kohorten än i allmänbefolkningen.

Överdödligheten i olika undergrupper under 25-årsperioden utgör ett annat problem vid tolkningen av resultaten. Man fann, att svåra fall av alkoholmissbruk med medicinska komplikationer visade en ökning under perioden 1957-1972, mest tydligt inom åldersgruppen 50-59 (från 1,1 % till 6,8 %). Utan bortfallet genom dödlighet skulle prevalenstalen troligtvis ha varit ännu högre (Delarbete I).

Tidigare undersökningar har talat för att alkoholkonsumtionen skulle vara högst i socialgrupp 1, medan socialgrupp 3 haft en dominans, när det gällt frågor om sociala följdverkningar av alkoholen (14). Med den metodik som använts i Lundbyundersökningen kan ett visst antal falskt negativa fall ej uteslutas, då det är känt, att missbrukare i särskilt socialgrupp 1 och 2 tenderar att missas vid registerundersökningar (11, 12). Resultaten från Delarbete II visar, att antalet missbrukare och medicinska alkoholister inom gruppen arbetslösa och/eller förtidspensionerade vida översteg det i landet genomsnittliga vid samma tidpunkt. Förhållandet bör ses mot bakgrunden av att från slutet av 1960-talet och början av 1970-talet undergick arbetsmarknadsläget i Sverige en förändring mot allt mindre behov av arbetskraft. Utslagningsmekanismerna har härigenom kommit att drabba inte minst missbrukargrupperna (21).

Tidigare har s k dold alkoholism förmodats utgöra majoriteten av missbrukarna, särskilt i jämförelse med det klientel som varit känt i nykterhetsvårdens register (12, 16, 17, 30). Vid tillgång till flera register visar sig bilden vara något annorlunda. Det var således

överraskande, att efter systematisk genomgång av olika register befanns de flesta av 1947-kohortens alkoholister och/eller svåra missbrukare (69 av 90) redan vara kända i minst ett av tre register - psykiatri, nykterhetsvård, kriminalvård (Delarbete III).

Sannolikheten att utveckla ett alkoholberoende och/eller en kronisk alkoholism någon gång under livet kunde uppskattas till 8,6 %, och sannolikheten totalt att debutera i alkoholmissbruk och/eller alkoholberoende under livet uppgick till 19,3 % (Delarbete IV och V). I andra mer utpräglade storstadspopulationer har livsriskerna uppskattats till mellan 25 och 30 % (20). Man har känt till att en stor del människor är alkoholberoende redan vid utgången av 20-årsåldern (och än fler vid utgången av 30-årsåldern), men veterligen är det första gången detta kunnat beräknas i en definierad totalbefolkning, och några helt jämförbara siffror om alkoholismens incidens föreligger följaktligen inte. Den lilla men klart antydda incidensökningen efter 60 år är likaså intressant och anmärkningsvärd, ehuru etiologin fortfarande är oklar. Kanske det skall ses som ett uttryck för en allmänt ökad vulnerabilitet, eventuellt organiskt orsakad, hos storkonsumenter av alkohol i denna åldersgrupp? Omställningssvårigheter i samband med pensioneringen måste troligtvis också tillmätas betydelse i sammanhanget (2,3).

Vid en kombinerad retrospektiv-prospektiv uppföljning av kohortens alkoholister och missbrukare var 43 % fortfarande aktiva missbrukare efter 15 år, 30 % var döda, och övriga 27 % kunde anses förbättrade. Gynnsammast förlopp hade de fall som vid början av observationsperioden ännu inte hade något beroende till alkoholen, i jämförelse med dem som hade ett sådant beroende, där endast ca 10 % hade kunnat upphöra med missbruket efter 15 år (Delarbete VI). Resultatet från denna långtidsuppföljning pekar på allvaret i den en gång satta diagnosen alkoholism och på behovet av adekvat behandling (5, 25, 26, 31). Kliniska undersökningar har visat, att be-

handlingen i regel kommit in för sent, och att forskningen främst kommit att handla om att registrera skadorna (19). Å andra sidan vet vi från nyare empiriska studier, som använt kriterier som t ex GT-värden (18) och livskvalitet (7), att man kan uppnå påtagliga resultat. Det finns således all anledning att satsa på innovationer på behandlingsområdet. Olika former av lekmanngaengagemang borde också kunna få större betydelse, exempelvis inom arbetslivet och fackföreningsrörelsen, Länkrörelsen och Anonyma Alkoholister.

Avslutningsvis kan konstateras, att flera år gått sedan de i avhandlingen ingående delarbetena började publiceras. Det är egentligen först nu som resultaten medger en samlad bedömning. Särskilt försiktig måste man vara när det gäller eventuell tillämpning av prevalenstalen från den 1 juli 1972 på dagens situation. Den viktigaste anledningen härtill är det ökande bortfallet ur materialet som dödligheten medför. Genom att samhället är i ständig förändring (inte minst arbetsmarknad och ekonomiska konjunkturer), förändras samtidigt riskerna att bli missbrukare. Kohorteffekter, som innebär att olika åldersgrupper kan löpa olika risk vid samma tidpunkt, komplicerar ytterligare tolkningen av resultaten. Det är också viktigt att hålla isär data som är retrospektiva från data som är prospektiva, t ex dödligheten. Inte minst sociala data kan ge utrymme för ett flertal tolkningar av möjliga orsakssammanhang (4, 22).

En uppgift för fortsatt forskning är att intensivstudera samspelet av olika konstitutionella, personlighetsmässiga och sociala faktorer. Analysen kan då få en mer interdisciplinär inriktning, och man kan på ett mera sammanhållet sätt belysa alkoholproblemen och de medicinska alkoholsjukdomarnas natur (1, 13). Ur förebyggande synpunkt bör intresset för de yngsta riskgrupperna intensifieras. I Lundbyundersökningen är det en brist på uppgifter om de allra yngsta probanderna, bl a beroende på att barnpsykiater hittills saknats inom forskargruppen.

Uppenbart är att individer s a s går ut och in i alkoholproblemen. Att så är förhållandet framgår av uppföljningsundersökningen, men har också visats i tidigare undersökningar. Det går därför ingen klar gräns mellan alkoholister och icke-alkoholister. Även på basen av mera begreppsliga analyser finns tveksamhet rörande förekomsten av en absolut gräns mellan alkoholister och icke-alkoholister (4). Världshälsoorganisationen har i stället velat introducera begreppet 'alcohol-related disabilities' (28, 32). Vidare har Sulkunen nyligen framhållit (27), att medan alkoholen håller på att bli en konsumtionsvara som alla andra, och alkoholbruket i princip har accepterats på ett enhetligt sätt i alla samhällsklasser, varierar själva dryckesbeteendet - inklusive berusningseffekterna - med livsstil och levnadssätt.

I avhandlingen har studerats det stora medicinska problem som alkoholbruket medför. Enligt den hälso- och sjukvårdslag, som trädde i kraft den 1 januari 1983, är det numera sjukvårdshuvudmannens lagstadgade skyldighet att vidta förebyggande åtgärder vad gäller olika sjukdomar. Den psykiatriska epidemiologin är den psykiska hälsovårdens grundvetenskap och innefattar även alkohol-sjukdomarna. Erfarenheterna från detta fält behövs också för fortsatta socialpolitiska insatser, om vi skall kunna minska alkoholproblemen i samhället.

5. SUMMARY

An epidemiological investigation of alcoholism in a total population; the Lundby Study

The thesis presents empirical base-lines from life history interviews and records for assessing the prevalence, the incidence, and the long-term outcome of alcoholism and heavy drinking among males in the general population (the Lundby 1947 cohort, N = 2,550) followed during 25 years.

The point-prevalence of alcohol abuse and alcoholism on the cross-section day of July 1, 1972, was 9.5 % (dependency syndromes 6.2 %). The type and the severity were found to have different patterns for different demographic subgroups.

The annual age-standardized and prospectively measured incidence rate based on approx. 15,000 observation years for the period 1957-1972 was 300 per 100,000. The individual expectancy (morbidity risk) was 19.3 %. The cumulated probability was manifested before 40 years of age in 80 % of the cases. It is the first time this has been shown in the epidemiological literature through calculation from an entire population. The findings give support for a higher incidence in the working class than in other social classes.

Finally, from a follow-up study of earlier defined alcoholics in the cohort retrospectively-prospectively observed through 15 years, alcoholism as a dependency syndrome was confirmed to be a valid working model for epidemiological use. The long-term outcome was that 30 % were recovered, 43 % were unchanged or worse, and 27 % had died.

Tabell 1. Översikt av erhållen information och bostadsort 1972 beträffande män och kvinnor ur 1947-kohorten.

Bostadsort	Antal personer totalt	Personligen undersökta 1972 %	Med tillräckliga uppgifter 1972 %
Män			
I Lundby den 1 juli 1947 och den 1 juli 1972	481	475 (98,8)	481 (100,0)
I Lundby den 1 juli 1947 men inte den 1 juli 1972:			
Avflyttade	471	454 (96,4)	466 (98,9)
Avlidna	360	- -	357 (99,2)
Kvinnor			
I Lundby den 1 juli 1947 och den 1 juli 1972	461	455 (98,7)	461 (100,0)
I Lundby den 1 juli 1947 men inte den 1 juli 1972:			
Avflyttade	464	455 (98,1)	463 (99,8)
Avlidna	313	- -	310 (99,0)

I Lundby = mantalsskrivna i Lundbyområdet vid skärningsdatum 1 juli 1947 eller 1972.

Tabell 2. Översikt över alla invånare i Lundby
den 1 juli 1947 (2.550 personer).

Ålder 1947	Män			Kvinnor		
	I Lundby 1972	Flyttade från Lundby 1947-72	Avlidna 1947-72	I Lundby 1972	Flyttade från Lundby 1947-72	Avlidna 1947-72
0-09	73	116	8	43	164	0
10-19	57	149	7	41	140	1
20-29	78	91	11	69	57	3
30-39	113	59	21	120	48	10
40-49	110	37	52	107	41	31
50-59	42	14	60	64	11	59
60-69	8	5	99	17	3	99
70-79	0	0	82	0	0	75
80+	0	0	20	0	0	35
0+	481	471	360	461	464	313
	1.312			1.238		

Tabell 3. Lundbyprojektet: Översikt över 1947-kohortens boende 1972. (Levande: 1.877 personer.)

Alder 1947	Landsbygd	Stad	Storstad	Övriga tätorter
MÄN				
0-09	18	37	37	97
10-19	20	42	64	80
20-29	45	13	38	73
30-39	57	16	12	87
40-49	37	11	10	89
50-59	21	4	4	27
60-69	4	1	1	7
70+	0	0	0	0
0+	202	124	166	460
KVINNOR				
0-09	26	48	44	89
10-19	33	34	47	67
20-29	35	13	22	56
30-39	46	13	14	95
40-49	32	12	12	92
50-59	19	1	3	52
60-69	2	1	0	17
70+	0	0	0	0
0+	193	122	142	468

Tabell 4. Dödligheten bland alkoholister och/eller svåra missbrukare i Lundby i 1947-kohorten 1957-1972.
(N = 96)

Dödsorsak	Ålder vid dödsfallet				
	-24	25-44	45-64	65+	Alla
Cardio- vasculära sjukdomar	-	1	-	13	14
Skador genom yttre våld o. förgiftning	1	-	1	2	4
a) suicid	-	-	(1)	(1)	(2)
b) olycksfall	(1)	-	-	(1)	(2)
Mag-tarm sjukdomar	-	-	-	4	4
Infektioner	-	-	1	2	3
Totalt	1	1	2	21	25

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Prevalence of Male Alcoholism in a Cohort Observed for 25 Years

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Prevalence of male alcoholism in a cohort observed for 25 years. Öjesjö, L. and Hagnell, O. (Dept. of Social and Forensic Psychiatry, Epid. Research Unit, Univ. of Lund, Sweden).

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The purpose of this work was to establish the age-specific prevalence rates of alcoholism syndromes in a cohort defined 25 years ago. Information has been collected by psychiatrists through free, exploratory field interviews subsequently checked against documentary records. Alcoholism was medically defined in three categories (abusers, addicts, and chronics). Drinking symptomatology active within the last year was estimated for 97.6% of the 952 men alive at the cross-section date July 1, 1972. Only three women were diagnosed as current alcoholics (0.3%) and women are excluded from the analyses. The prevalence of alcoholism among men was 9.5% (abuse 3.3%, addiction 2.8%, chronic alcoholism 3.4%). Type and severity of alcoholism were found to have different patterns for different age groups. The number of persons with the more severe forms had increased between 1957 and 1972, most apparent chronic alcoholism in age group 50-59 (from 1.1% to 6.8%). The longitudinal dynamic will be the object of special analyses.

The prevalence and general distribution of alcoholism as well as its distribution among subgroups of the population needs continuous documentation. Unfortunately, none of the indirect measures (liver cirrhosis rates, sudden death rates, alcohol sales data, overall level of consumption) are reliable enough to permit detailed comparison between different demographic groups. Even the important Ledermann curve (3) is only an approximation, i.e. we do not know the relationship between consumption and percentage of "alcoholics" (22).

The most appropriate way of estimating alcoholism in epidemiological studies is in part determined by the method of sampling, in part by the supplementary information which is available. The general approach, however, should be as inclusive

as possible (2, 11, 25). Earlier rates-under-treatment studies were mainly limited to the notoriously unreliable data from selected populations in hospitals and jails, but the early 1960s witnessed a break, as more and more investigators began to apply epidemiological techniques, filed investigations and household interviews (29). The most successful surveys in practice have been those that have concentrated on a complete coverage of all cases of alcoholism in the studied populations. Such an approach minimizes the bias that one is likely to obtain when one selects only a subsample. Other advantages with the complete population surveys are that the diagnostic standard for inclusion can be prearranged and much more collateral evidence on individual characteristics and social background can be collected. Knupfer's (20) and Cahalan's (2) studies on problem drinkers in America are examples of large comprehensive studies relevant to the epidemiology of alcoholism. Knupfer interviewed a San Francisco sample of the general population and could give figures for the prevalence of problem drinkers according to various indices. In Cahalan's study, adult men throughout the USA were interviewed. Nine per cent of these were found to have severe drinking problems. Demographic correlates were analysed and individuals with various degrees of drinking problem could be followed longitudinally.

The present paper has as its main purpose to describe the distribution of active alcoholism in a cohort of Swedish males. Apart from Hagnell & Tunving's (17) report on the 1957 data, there is to our knowledge no other study where it has been possible to ascertain the occurrence of alcoholism in a complete population of an area observed for more than one generation with the same methods. The intention has been to compile data from own field interviews and from various other sources in

order to get a coverage both for one point in time (July 1, 1972) and for the period (1957–72). The data can provide base-lines for comparisons with earlier findings and for comparison between different subgroups (23, 33, 34).

METHOD AND MATERIAL

Method

The procedures applied have been the following:

(a) a combined social-psychiatric and somatic anamnesis of every person was compiled by the research psychiatrists personally,

(b) an ordinary "clinical" investigation of the psychic status was made in conjunction with (a),

(c) the material obtained was supplemented with documentary records from the local and regional (or national) registers,

(d) categorizations were finally made upon the entire report on a respondent case, i.e. on interviews, registers, other sources.

The interviews and the data collection have been as complete as possible and have been accomplished regardless of the subjects' places of residence, thus including urban areas, 'skid rows', jails and hospitals. The present investigation constitutes only one section of our longitudinal study, as the material permits an extensive survey of different psychiatric problems and considers a great amount of information on each person. A major methodological advantage is that the interviewers have been looking for specific persons, wherever they live, ensuring equal probabilities between all individuals in the sample. The fact that the investigators have been interested in evaluating every proband has ensured that persons without, as well as with, mental disorders have been examined to the same general degree. Interviews have been of a relatively free, exploratory type and it was intended to get information about all kinds of psychiatric and somatic disorders. The method was largely of the type used in clinical psychiatry, especially in out-patient work, although probably somewhat more systematic and focused. The length of each interview was usually about an hour. Establishing good contact and free expression on the part of each respondent was given high priority to elicit the most valid information.

Definition of alcoholism. According to the description given by Hagnell & Tunving (17) we have used the following definitions: To be counted as a case of alcoholism in this study means active signs and symptoms on cross-section date July 1, 1972 and/or within the elapsed year 1.7.1971–30.6.1972, of

A. excessive drinking and an increased alcohol tolerance, and/or

B. changed behavioral patterns: trigger mechanism (a pathological desire for alcohol after ingestion of small quantities—a trigger dose), drink dose recovery (the need for a drink the morning after); blackouts (amnesia after alcohol intake).

The alcoholics were divided into three groups: Alcohol abusers (Abu) = symptoms described under A above,

Table I

Age at death	Number
<i>Men of the 1947 cohort deceased between 1947 and 1972 (N=360)</i>	
0–09	1
10–19	2
20–29	9
30–39	11
40–49	13
50–59	29
60–69	65
70–79	100
80–89	98
90+	32
0+	360
Age 1972	Number
<i>Men from the 1947 cohort living on July 1, 1972 (N=952)</i>	
25–29	111
30–39	169
40–49	204
50–59	162
60–69	184
70–79	91
80–89	27
90+	4
25+	952

Alcohol addicts (Add) = at least two of the symptoms under B, and Chronic alcoholics (Chr) = at least two of the symptoms under B together with an anamnesis of epileptic seizures or delirium and/or signs of alcohol-related sequelae such as cirrhosis of the liver, other liver damage, polyneuropathia, cerebral deterioration. The relatively value-free research criteria make it possible to study the alcohol disorders in relation to their social concomitants without arguing in a circle (17, 19, 28).

MATERIAL

The data used are taken from the Lundby study. This is a longitudinal investigation that has been proceeding since 1947, when Essen-Möller and co-workers first made a medical-psychiatric census survey of all the inhabitants in the Lundby community situated in the south of Sweden (9). The population of this report are the 952 men still alive in 1972. The original cohort included 2 550 persons (1 312 men, 1 238 women) in the parish registers of two neighbouring parishes outside the city of Lund at 00.00 hours between June 30 and July 1, 1947. The sample is defined in a way that each person will be counted only once.

In 1957 one of the present authors, Hagnell, added a prospective dimension and personally reinterviewed the population, regardless of where the persons had moved (15). The number then was 2 297 (1 184 men and 1 113 women). In both Essen-Möller's and Hagnell's investigations the drop-out rate had been extremely low, 1% or

Table II. Residence in 1972 of the 1947 Lundby cohort (men)

Age 1947	Rural area	Small towns	Big city area	Other densely built-up area
0-09	18	37	37	97
10-19	20	42	64	80
20-29	45	13	38	73
30-39	57	16	12	87
40-49	37	11	10	89
50-59	21	4	4	27
60-69	4	1	1	7
70-79	0	0	0	0
80+	0	0	0	0
0+	202	124	166	460

even less. In fact, Hagnell interviewed or was able to collect valid information from 99.6% of the original cohort. The project has been described and evaluated several times and may be looked upon as an epidemiological laboratory dealing with most kinds of psychiatric morbidity (16, 21, 26).

The second prospective study was accomplished in 1972. All persons from the 1947 cohort still alive were resurveyed with principally the same methods as before and the results are now being processed (18). In order to find out a proband's address on the cross-section date July 1, 1972, all proband identification numbers have been matched with the register of the entire Swedish population. Dead or emigrated cannot be traced in this way; regarding these 673 subjects we had to turn to the parish offices concerned. Of the 1838 persons who lived in Sweden on July 1, 1972 approximately 50% were still living in the original Lundby area, while most of the others were found in nearby towns and cities. It is obvious that the sample is not the same rural population it was at the outset. The urban-rural distribution is instead more representative of the general Swedish population, which also seems to be valid for the social class variables concerning the sample (Tables I-III). A discrete scale was used with class defined from each individual's occupation and role in pro-

duction (working class broadly corresponding to "lower", "blue-collar" groups; bourgeoisie, petit bourgeoisie and middle strata roughly to "upper" and "middle" class groups in the traditional literature). During the period 1947-72 the number of farmers, farm labourers and artisans has declined appreciably, while factory employees and those occupied in service and administration have increased "as the close-knit self-sufficient provincial village loosened its internal ties and reached out to take part in the modern world" (21). The urbanization tendencies are very marked and the region may now be best characterized as an urban-suburban conglomerate. The number of commuters has increased, above all those occupationally active who travel every day between the Lundby area and the two cities nearby (Lund and Malmö). Of the 952 men in the cohort who had survived to the cross-section date July 1, 1972, 97.6% were interviewed during the period of field research (May 1972 - December 1974) (Table IV).

RESULTS

The prevalence of alcoholism was found to be very different between the sexes. Only three women (0.3%) were diagnosed as active alcoholics on the

Table III. Class

Class	Sweden national sample of gainfully employed (Therborn, 1976) ^a (%)	Lundby total male population (Öjesjö, 1979) ^b (%)	Absolute number
Bourgeois	1.5	2.7	26
Petit bourgeois	15	23.7	226
Middle strata	28	21.7	207
Working class	53	50.8	484
Other	2.5	1.1	9
All	100.0	100.0	952

^a Source: The Swedish class structure 1930-1965: a marxist analysis. In: R. Scase (ed.), Readings in Swedish Class Structure.

^b Source: ref. 34.

Table IV. *Crude response rate of Lundby 1947 cohort (men)*

952 men alive at cross-section date July 1, 1972

	Number	%
Total no. interviews performed	929	97.6
All non-contacts	22 ^a	2.3
Refusals	1 ^b	0.1
Effective sample	952	100.0

^a 2 persons with diagnosis "alc. chron." (doubtful). 1 "addict" (adequate information from family and registers).

^b No person with an alcohol diagnosis.

cross-section date July 1, 1972. The results which follow are therefore concerned with the 952 men. Of an estimated total number of 121 male alcoholics 32 had died between 1947 and 1972, i.e. about 25%. Hagnell counted 96 current (male) cases in 1957. At the follow-up 1972, 15 years later, 72 were still alive, while 24 had died. The 'chronic' category had the worst prognosis of all; here 55% had died (8 of 18). The most common causes of death were vascular disorders (14 of 24), infections (3 of 24) and suicide (2 of 24). About 30% of Hagnell's alcoholics from 1957, mostly of the 'abuse' type, did not show any active signs and symptoms in 1972. On the other hand there has been an incidence of new alcoholics to compensate for the cohort's attrition. The total number of new alcoholics developed during the 15-year period 1957-72 is estimated to 41 cases (current 39; deceased 2, thereof suicide 1, malignant lymphoma 1). The longitudinal dynamic will be the object of special analyses.

Current active alcoholism in men in 1972 was 9.5%, of which 3.3% (31 of 952) were abusers, 2.8% (27 of 952) were addicts and 3.4% (32 of 952) were chronic alcoholics. Rates of diagnosed alcoholism increased with age to a peak value of 12.3% (20 of 162) in the 50-59 age group (Table V).

Prevalence rates by type of alcoholism were found to reveal different patterns for the three categories. Abusers were the most frequent in age group 30-39 (4.7% or 8 of 169) and in age group 70+ (4.9% or 6 of 122). The addicts showed an even spread between the age groups, representing slightly less than 3% of the total male population. Finally, the rates of chronic alcoholism showed a steady increase with age from 0.9% (1 of 111) in the 25-29 age group to 6.8% (11 of 162) in men aged 50-59. Sequelae among the chronic alcoholics were

cirrhosis of the liver (1 case), other liver damage (5 cases), polyneuropathia (2 cases) and cerebral deterioration (12 cases).

The severe forms of alcoholism (addicts and chronics) had increased during the period 1957-72; addiction from 2.8% to 2.9%, chronic alcoholism from 1.8% to 3.3%. The most obvious increase was for age group 50-59 (from 1.1% to 6.8%, in absolute numbers from 2 of 190 to 11 of 162).

DISCUSSION

The selection of alcoholics was based on a clinical definition, viz. on alcoholism defined as a medical syndrome (5, 31). The essential elements should be a narrowing in the repertoire of drinking behaviour, salience to drink seeking, increased tolerance of alcohol, withdrawal symptoms, subjective awareness of compulsion to drink and reinstatement of the syndrome after abstinence (8). But the task of determining how many alcoholics there are at any place at any given time by anamnestic verification of detailed symptoms in every case is extremely difficult if not impossible. Therefore, due to the notorious difficulties involved here, alcohol consumption data were not registered. Still, heavy consumers often have the "cardinal" symptoms, distinctions that can be used as an index of pathology when the alcoholics are separated from the rest of the drinking population. "Loss of control", rather impaired control (drinking more, and becoming more intoxicated than one intended), exists, but does not distinguish qualitatively between pathological and non-pathological drinkers (30). The same may be said about "blackouts", as non-alcoholics when drinking large quantities of alcoholic beverages also experience amnesia (blackout) but much less often as a rule, than the alcoholics (13).

The convergence between self-report data and external criteria is sometimes impressive. In (1) the New York survey by Bailey et al. it was noted that virtually no cases picked up through the survey appeared in the registers under diagnoses other than alcoholism. Edwards et al. (7) report that no man contacted in their study was identified by any agencies without also being detected by direct interviewing. In the Lundby cohort with the use of a clinician's free exploratory interview and with nearly all in the cohort personally interviewed, we believe that most alcoholics would be diagnosed. If

Table V. *Prevalence of active alcoholism in Lundby 1947 cohort at cross-section date July 1, 1972*
 Absolute numbers and percentage of a total population. Men aged 25+

Total population of men aged 25+		Alcoholics							
		Abusers		Addicts		Chronics		Total	
Age 1972	N	n	%	n	%	n	%	n	%
25-29	111	3	2.7	3	2.7	1	0.9	7	6.3
30-39	169	8	4.7	5	3.0	4	2.4	17	10.1
40-49	204	7	3.4	5	2.5	6	2.9	18	8.8
50-59	162	3	1.9	6	3.7	11	6.8	20	12.3
60-69	184	4	2.2	4	2.2	8	4.3	16	8.7
70+	122	6	4.9	4	3.3	2	1.6	12	9.8
Total	952	31	3.3	27	2.8	32	3.4	90	9.5

the sample is biased, it is towards the later stages of alcoholism. As noted by Phillips, this is understandable because most definitions of alcoholism either explicitly or implicitly relate to observable behavioral factors (24).

The prevalence of alcoholism among the adult men was found to be 9.5%, categorized as abuse (3.3%), addiction (2.8%) and chronic alcoholism (3.4%). Of the total number so defined there was an

uncertainty with about 12% in the group (11 of the 90 "alcoholics"), most of whom belonged to the "abuse" category (6 men), a few to the "addicts" (4 men) and one (1 man) who was a probable chronic. In these cases where it was difficult to estimate the true activity, 2 persons were living in homes for the aged and possibly under some control there, 1 person was ill with cancer oesophagus, 1 person was paralysed after a stroke. A questionable case

Table VI. *Point prevalence of alcoholism in men aged 20+ (recent studies)*

Reference	Country	Sample	Size (men)	Method	Prevalence in percent (cross-sectional)	
Knupfer (1967)	USA	Urban probability sample survey (San Francisco)	403	Structured interviews by lay interviewers	2.5-11.6	
					Prolonged drunks	2.5
					Addictive symptoms	5.7
					Summary index of dependency	11.6
Cahalan & Room (1972)	USA	National probability sample survey	978	Structured interviews by (male) lay interviewers	5-9	
					Loss of control	5
					Binges	6
					Psychological dependency	9
Hagnell & Tunving (1972)	Sweden	Field survey of total population (Lundby)	950	Free interviews by expert (psychiatrist), registers, other information	2.0-10.3	
					Chron. alcoholism	2.0
					Alcohol addicts	3.4
					Alcohol abusers	4.9
					Total	10.3
Wieser & Feuerlein (1976)	B.R.D.	Urban probability sample survey (Bremen)	237	Mailed questionnaires	3.0-7.2	
					Escape drinkers	3.0
					Loss of control	4.2
					Addictive symptoms	5.0
					Trigger symptoms	7.2
Hagnell & Öjesjö (1979)	Sweden	Field survey of total population (Lundby cohort)	952	Free interviews by experts (psychiatrists), registers, other information	2.8-9.5	
					Chron. alcoholism	3.4
					Alcohol addicts	2.8
					Alcohol abusers	3.3
					Total	9.5

was a sailor who told us that he drank only when at sea; the other 6 included had been known advanced alcoholics for years but denied any current drinking problems. Alcoholism as "abuse" was most frequent in age groups 30–39 (4.7%) and 70+ (4.9%). The "addicts" were evenly dispersed between the ages and represented slightly less than 3% of the male population; "chronic" alcoholism showed a steady increase in frequency with age from 0.9% in age group 25–29 to 6.8% in age groups 50–59. These general population findings are somewhat at variance with Segal's (27) suggestion that the "peak-age" for alcoholism lies considerably below 40. Our cohort data are not that clear at all—note for instance the high "abuse" levels for men above 70—but similar findings to ours have been reported by Bailey et al. (1), who found that rates were maintained even in the 65–74 age group. Detailed further analysis of different sub-groups and particularly the incidence rates in different age decades are obviously required.

In the Lundby population sample, basically the same methods have been used since the beginning and the illness criteria have been the same in its two prospective surveys (1957 and 1972). When the alcoholism data from these later studies are compared one finds that the more advanced forms (particularly chronic alcoholism) have increased both in absolute and in relative numbers. The findings show the same trends as other recent research, i.e. that the medical alcohol complications tend to be more severe than before (4, 32).

Fox's oft-cited finding (10) was that 1 in every 13 American men was an alcoholic. Other broad estimates range from five to nine million Americans (14). In our cohort and 25 years after its definition we end up with a total of 9.5% active male alcoholics. The size of the problem revealed by epidemiological facts shows the inadequacy of the political response to alcoholism which accords so little urgency to prevention (6, 12).

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The Relationship to Alcoholism of Occupation, Class and Employment

Leif Öjesjö, M.D.

The status of the labor market is of importance in the employment of alcoholic persons, but is usually neglected in medical reports. The aim of the present paper is to assess the prevalence of alcoholism among men in different occupations and classes within as well as outside of the labor force. The data were taken from a Swedish general population study, the now twice-resurveyed Lundby 1947 cohort (N = 952). Information was collected through field interviews conducted independently of the administrative recording, but was checked afterwards against documentary records. Occupation, class and employment were independent variables; alcoholism was a dependent variable. It was found that alcoholism was most prevalent among workers (11.1%), among small scale entrepreneurs (13.7%) and among groups outside of the labor force (13.9%), particularly the subgroup early retired and unemployed (29.6%). The findings suggest a relation to current crisis tendencies in the Swedish "welfare" society.

The significance of social class and labor as dimensions in influencing excessive drinking was noted very early. In the older literature there was frequent reference to the popular notion that heavy manual work could not be borne without the help of alcoholic beverages.¹ Today no employing organization is immune to the effects of alcohol abuse and alcoholism, since these are endemic in most countries,² and union representatives consider alcohol misuse as one of the most pressing problems.³ Moreover, it has been suggested that illnesses which are more frequent in one occupation than in the normal population should be classified as occupational injuries so long as no evidence to the contrary appears in the individual case.⁴ Most alcoholics work at a full-time job during the years of developing addiction. They may number 3 to 5% of a typical work force, a figure which varies in accord with the age and ethnic composition of a

particular employee group.^{5,6} High rates are found among certain groups outside the labor force, especially in the unemployed sector, and unemployment benefits and premature retirement pensions paid as a result of incapacity for work due to an alcohol-related disability account for increasingly heavy social security costs in many countries.⁷⁻⁸

Available general population data hint at different class styles of drinking. The traditional way a social group uses alcohol influences alcohol-related problems, and probably does so regardless of genetic and personality factors, though these too may play a part. If the focus is on the interaction of behavioral and situational variables in the determination of consequences of drinking, it is wise to study each life arena separately.^{9,10}

Studies of drinking patterns have shown that alcohol problems are more prevalent among the poor than among the remainder of the population, even though drinking at all is more prevalent among the economically more privileged.^{6,11-16} Investigators repeatedly have stressed the danger of generalization from one particular section of the alcohol-consuming population, and the importance of the study of drinking habits as well as of the prevalence and incidence of alcoholism among various demographic subgroups has been recognized. On the strength of the evidence of one recent study, however, it would appear that, of the items examined, current occupation was the most influential in determining an individual's drinking habits and consequent alcohol-related problems.^{10*} Social and health professionals have tended

*The following eight reasons are those most commonly suggested to explain why some occupations do have such high rates of alcohol-related problems: (1) availability of alcohol at work (e.g., drink trade), (2) social pressure to drink at work (e.g., servicemen, seamen), (3) separation from normal social or sexual relationships (e.g., servicemen, seamen, commercial travelers), (4) freedom from supervision (e.g., executives, physicians, lawyers), (5) very high or very low income levels (e.g., professionals, the unemployed, or unskilled workers), (6) collusion by colleagues (fear of dismissal or exploiting a colleague's incapacity), (7) strains and stresses, e.g., danger (seamen, coal miners, servicemen), responsibility (physicians, lawyers, executives), job insecurity (actors), boredom, etc., and (8) recruitment of "unusual people" predisposed to drink heavily (e.g., merchant navy).

to be reactive rather than proactive in serving working people on these matters.¹⁷

Cahalan's general population findings indicate that the youngest group shows the highest prevalence of consequences of drinking, though a relatively high level of consequences persists into middle age in the lowest status groups. As far as is known, there is no single form of relationship that holds for all measures and in all situations. In any case, it would be most unwise in research as well as in policy-making to assume that target populations are simply institutional populations "writ large."¹⁴ Murray¹⁸ estimates that 13.5% of alcoholics are either unemployable or retired and that perhaps four-fifths of alcoholics may go undetected at their workplace. Physicians are hesitant to label their patients as alcoholics and it is believed that alcoholism may be overshadowed by various co-existing conditions or impairments.¹⁹ Obviously an effective procedure for identifying the real numbers and utilizing the information would fill an urgent need.²⁰

In an earlier investigation of the Lundby cohort, Hagnell and Tunving²¹ found that there were more alcoholics than expected in manual work groups, especially among so-called unskilled workers. The new data from the now three-times-surveyed population provide an opportunity to make further explorations in this field, where nobody denies that the problems are significant. They are significant in human loss, in loss of business efficiency, in increased sickness disability and in increased accident disability both on and off the job. It is necessary to investigate where the problem populations come from, why their behaviors and characteristics create problems, and how they are expressed in a developing political economy and a specific form of socio-economic organization. Disorders emerge from the interaction between social relations and conditions, not from working conditions alone, and, in the search for their cause, the patho-physiological impact of social class should be studied.²²⁻²⁶ The main research questions for the present study were the following. (1) What were the rates of alcoholism among the classes in the investigated population? (2) What were the rates among the different occupational and employment sub-groups? To what extent was alcoholism related to unemployment or to unemployability? (3) How much was known to and how much was hidden from the official agencies in this respect? (4) How do these relationships occur, i.e., how can proneness to alcoholism be related to the structure of Sweden as a late capitalist society?

Methods

The following procedures have been applied. (1) A combined social-psychiatric and somatic anamnesis of every person was compiled by the research psychiatrists personally. (2) An ordinary "clinical" investigation of the psychic status was made together with (1). (3) The material obtained was supplemented with documentary records from the local and regional (or national) registers. (4) Categorizations were finally made upon the entire report on a respondent case, i.e., on interviews, registers and other sources.

The interviews and the data collection have been as complete as possible, and have been accomplished re-

gardless of the subject's place of residence, including urban areas, skid rows, jails and hospitals. The present investigation constitutes only one section of this longitudinal study as the material, which includes a great amount of information on each person, permits an extensive survey of different psychiatric problems. A major methodological advantage is that the interviewers have been looking for specific persons wherever they live, ensuring equal probabilities of participation between all individuals in the sample. The fact that the investigators have been interested in evaluating every proband ensured that persons without, as well as with, mental disorders have been examined to generally the same degree. Interviews have been of a relatively free, exploratory type, and were intended to get information about all kinds of psychiatric and somatic disorders. The method was largely of the type used in clinical psychiatry, especially in outpatient work, although probably somewhat more systematic and focused. The duration of the interviews was usually about one hour. Establishing good contact and free expression on the part of the respondent was given high priority in order to elicit the most valid information.

Definitions

Alcoholism. — According to the description given by Hagnell and Tunving,²¹ alcoholism has been defined in this study as showing active signs and symptoms, on cross section dated July 1, 1972, and within the year July 1, 1971, to June 30, 1972, of: (1) excessive drinking and an increased alcohol tolerance; (2) changed behavioral patterns: trigger mechanism (a pathological desire for alcohol after ingestion of small quantities — a trigger dose); drink dose recovery (the need of a drink the morning after); and black-outs (amnesia after alcohol intake).

The alcoholics were divided into three groups: alcohol abusers (those possessing the symptoms described under 1 above); alcohol addicts (those having at least two of the symptoms under 2); and chronic alcoholics (those with at least two of the symptoms under 2 together with an anamnesis of epileptic seizures or delirium, or signs of alcohol-related sequelae, such as cirrhosis of the liver, other liver damage, polyneuropathy, or cerebral deterioration). The relatively value-free research criteria make it possible to study the alcohol disorders in relation to their social concomitants.^{21 27}

Occupation, Employment and Class. — These were defined on the basis of position in the process of production and in the total economy of the Swedish capitalist society. The main classes are the workers and the capitalists (the bourgeoisie), i.e., those who sell their labor power and those who own their means-of-production. In addition there are the petit bourgeoisie of self-employed small entrepreneurs, artisans and farmers, and the middle strata of technicians, clerks and other "white collar" employees. A discrete scale was used with class operationally defined from each individual's occupation and employment. Non-working dependents (housewives, husbands, students, children, etc.) were considered to be members of the class of the "bread-winners" and usually the father's occupation was used. In the case of the retired (the aged sector) and the early retired (the disability pensioner sector) the occupation which they had pursued for most of

Table 1. — Employment, Lundby 1947 Cohort and Sweden, July 1, 1972 (N = 952).

Employment Status	Lundby 1947 Cohort Absolute No.	%	Sweden*
Gainfully employed	722	76	78
Not gainfully employed	230	24	22
Retired	167	17.5	10
Students	4	0.4	5
Unemployed	5	0.5	2
Early retired	49	5.2	5
Other	5	0.5	
Total number	952	100.0	

*16-74 year old men. Source: Official Statistics of Sweden: Living Conditions, National Bureau of Statistics, Report No. 2. Stockholm, 1976

their working lives was used, or if they were unemployed the last occupation they had held. Unemployment was defined as having been without work for six months or more.^{26 28 29}

Material

The Sample. — The data used are taken from the Lundby study, a longitudinal investigation that has been in progress since 1947, when Essen-Möller and co-workers first made a medico-psychiatric census survey of all the inhabitants in the Lundby community in the south of Sweden.³⁰ The population of the current report consists of the 952 men who were still alive in 1972. The original cohort included 2,550 persons (1,312 men and 1,238 women) in the parish registers of two neighboring parishes outside the city of Lund at 00.00 hours between June 30 and July 1, 1947. The sample is defined so that an individual is counted only once. In 1957 another psychiatrist, Hagnell, added a prospective dimension and personally interviewed the population regardless of where the persons had moved.³¹ The number then were 2,297 (1,148 men and 1,113 women). In both Essen-Möller's and Hagnell's investigations^{30 31} the drop-out rate had been extremely low, 1% or less. The project has been described and evaluated several times and may be looked upon as an epidemiological laboratory dealing with most kinds of psychiatric morbidity.^{32 33 34} The second prospective study was done in 1972. All persons alive from the 1947 cohort were resurveyed with principally the same methods as before and the results are now under processing.³⁵ In order to find out a proband's address on the cross-section date July 1, 1972, all probands' identification numbers were matched with the register of the total population of Sweden. Of the 952 men in the cohort who had survived to the cross-section date, 97.9% were interviewed during the period of field research (May 1972 to December 1974). Approximately 50% were still living in the original area, while most of the others were found in the surrounding towns and cities. It is obvious that the sample is not the rural population that it was at the beginning. The urban-rural distribution is instead more representative of that of the Swedish general population, which also seems to be valid for other demographic and social variables (Tables 1 and 2). During the period 1947-1972 the number of farmers, farm laborers and artisans declined, while factory employees and those oc-

Table 2. — Class Structure in Sweden in the 1970s (Summary Table).

Class	Lundby Total Male Population (Öjesjö, 1979)		Sweden National Sample of Gainfully Employed (Therborn, 1976)
	Absolute No.	%	%
Bourgeois	26	2.7	1.5
Petit bourgeois	226	23.7	15
Middle strata	207	21.7	28
Working class	484	50.6	53
Other	9	1.1	2.5
All	952	100.0	100.0

cupied in service and administration increased in number. There has been an increase in the number of commuters, above all, of those who are occupationally active and travel every day between the Lundby area and the two cities nearby (Lund and Malmö).

Findings

Prevalence of Alcoholism. — Table 3 shows the estimated prevalence of alcoholism in the undifferentiated cohort at one point in time. Table 4 shows the prevalence of alcoholism by class in the Lundby general population. With such a small population base the findings must be taken extremely cautiously, since only one or two positive diagnoses can give the class an unusually high prevalence risk rate. When a routine control of the age factor was done it was found that the proportions of alcoholics below and above 40 years of age were about the same (1:4) in the working class and the non-working class.

Table 5 shows the prevalence of alcoholism by employment status. The percentage of alcoholics was 8.0 within the labor force (observed/expected ratio 0.85) and 13.9 outside the labor force (observed/expected ratio 1.4). The difference between the groups may be regarded as significant ($p = 0.02$). A still more significant difference was noted between the subgroups outside the labor force, particularly between the retired and the early retired and the unemployed ($p = 0.001$). It was found that 8.4% of the retired and as many as 24.5% of the early retired were alcoholics. In other words, one in four male disability pensioners was classified as an alcoholic, and among the unemployed four out of five men could be so classified. Table 6 shows the prevalence of alcoholism by class among subgroups *within* the labor force, and Table 7 shows the prevalence of alcoholism by class among subgroups *outside* the labor force.

Alcoholism and Occupation. — Table 8 shows the prevalence of alcoholism by occupation and by participation in the labor force.

Table 3. — Prevalence of Active Alcoholics in Lundby 1947 Cohort, July 1, 1972, Men Aged 25+ (Absolute Numbers and Percentage of Total Population of Men Aged 25+) (Total Population 952).

Total	Alcoholics			All No. %
	Abusers No. %	Addicts No. %	Chronics No. %	
952	31 3.3	27 2.8	32 3.4	90 9.5

Table 4. — Prevalence of Active Alcoholics by Class in Lundby 1947 Cohort (Men Aged 25 + , July 1, 1972).

Class	Total	Observed	No. of Alcoholics % of Total	Expected	Obs/Exp
Bourgeois	26	1	3.8	2.5	0.4
Middle strata	202	13	6.4	19.4	0.7
Petit bourgeois	231	19	8.2	22.1	0.9
Working class	484	57	11.1	46.5	1.2
Unclassified	9	0	0.0	0.9	—

Table 5. — Prevalence of Active Alcoholics by Employment Status in Lundby 1947 Cohort (Men Aged 25 + , July 1, 1972).

Employment	Total	Observed	No. of Alcoholics		Obs/Exp	p
			% of Total	Expected		
Gainfully employed	722	59	8.2	69	0.85	0.020
Not gainfully employed	230	31	13.9	22	1.40	(X² = 5.743)
Retired	167	14	8.4	13	1.1	0.001
Early retired	49	13	24.5	4.7	2.5	(X² = 27.99)
Unemployed	5	4	(80.0)	0.5	8.0	
Other	9	1	(33.3)	0.3	3.4	

Table 6. — Prevalence of Active Alcoholics by Class Within the Labor Force, Lundby Cohort (Men Aged 25 + , July 1, 1972).

Class	No.	No. of Alcoholics		Obs/Exp	% Alcoholics
		Observed	Expected		
Bourgeois	19	1	1.8	0.5	5.3
Middle strata	182	9	17.5	0.5	4.9
Petit bourgeois	154	12	14.8	0.8	7.7
Working class	367	38	35.2	1.1	10.4

Table 7. — Prevalence of Active Alcoholism by Class Outside the Labor Force, Lundby 1947 Cohort (Men Aged 25 + , July 1, 1972).

Class	No.	No. of Alcoholics		Obs/Exp	% Alcoholics
		Observed	Expected		
Bourgeois	7	0	0.7	—	0.0
Middle strata	20	4	1.9	2.1	20.1
Petit bourgeois	77	7	7.4	0.9	9.1
Artisans & shop keepers only	17	5	1.6	3.1	29.4
Working class	117	19	11.2	1.7	16.2

Table 8. — Alcoholism, Occupation and Participation in Production, Lundby 1947 Cohort (Men Aged 25 + , July 1, 1972).

Occupation	Alcoholism											
	% Alcoholism				Observed				Expected			
	In Prod		Outside	All	In Prod		Outside	All	In Prod		Outside	All
	No.	Prod	Prod		No.	Prod	Prod		No.	Prod	Prod	
Large entrepreneurs	26	5.3	0.0	3.8	1	0	1	1.8	0.7	2.5	0.5	—
Farmers, tenants	138	6.3	3.4	5.1	5	2	7	7.5	5.6	13.1	0.7	0.4
Technicians, foremen ("white collar")	202	4.9	20.0	6.4	9	4	13	17.5	1.9	19.4	0.5	2.1
Workers ("blue collars")	484	10.4	16.2	11.1	38	19	57	35.2	11.2	46.5	1.1	1.7
"Unqualified"	185	17.9	19.1	18.3	21	13	34	11.2	6.5	17.8	1.9	2.0
Artisans, shop keepers, small entrepreneurs	88	9.9	29.4	13.7	7	5	12	6.8	1.6	8.5	1.0	3.1

Table 9. — "Hidden" and "Known" Alcoholism in Relation to Employment Status, Lundby 1947 Cohort (Men Aged 25 +, July 1, 1972, N = 90).

Employment Status	No.	Alcoholics		Hidden/Known		p
		Hidden	%	Known	%	
Gainfully employed	58	10	17.2	48	82.8	0.10($\chi^2 = 3.38$)
Not gainfully employed	32	11	34.4	21	65.6	
Retired	14	8	57.1	6	42.9	
Early retired	13	3	23.1	10	76.9	
Unemployed	4	0	0.0	4	100.0	
Other	1	0	0.0	1	100.0	
All	90	21	23.3	69	76.7	0.30:1

Alcoholism Hidden and Known to Agencies. — Table 9 shows the employment status among alcoholics "hidden" and "known" to agencies. Within the labor force 17.2% of alcoholics were hidden and 82.8% were known. The difference in hidden alcoholism within and outside the work force is of borderline significance (10% level). Outside the labor force 34.4% of alcoholics were hidden and 65.6% were known.

Table 10 shows alcoholism hidden and known to agencies in relation to class. One bourgeois alcoholic was known; none was hidden. In the middle strata, four of 13 alcoholics were hidden and nine were known; in the petit bourgeois class six of 19 were hidden and 13 were known. Most visible were alcoholics from the working classes; 46 of 57 were known and only 11 were hidden. Of gainfully employed alcoholics three out of four in the middle strata, three out of six in the petit bourgeois class and four out of 11 in the working class were unknown to the agencies (Tables 11 and 12).

Discussion

The general market situation is an important factor in the employment of alcoholic persons but is usually neglected in medical reports. Alcoholism is one response to economic downturns and booms.³⁶⁻³⁷ The more reserve manpower there is available, the easier it is to exclude alcoholic workers. The supply of reserve workers depends partly on the training required for the work and partly on the employment situation. When full employment prevails, the harm done by alcohol turns generally from being a problem of social policy to become more specifically concerned with labor policy.³⁸

Trice³⁹ has said that notions about alcoholism and jobs involve two basic problems: lack of objective data and lack of perspective. Only a small number of studies provide systematic, objective evidence about job impact, and rarely do they compare non-alcoholic personnel with alcoholic employees. Indeed, the narrow focus may even have prevented discovery of the real impact of the different milieu mechanisms.³⁹ The existence of an associa-

tion between "ethnicity" and drinking problems is inarguable, but the number of possible hypotheses about the meaning of this relationship has far outrun the capacity to test them.¹⁰⁻²⁵ No doubt estimations of prevalence of alcoholism and its variation in different classes and subgroups of the population are major tasks for research; but due to the intervening effects of other variables it has been difficult to demonstrate the true meaning of labor in relation to the incidence of this disorder. More facts, especially of a longitudinal nature, can probably provide better answers. Alternative and more direct approaches might also be chosen where individual life histories as well as aggregates and statistics are taken into consideration.¹⁶ The findings derived from the Lundby study are at least indicative that not only the rates but also the forms in which alcoholism and alcohol problems manifest themselves will vary considerably with the environment and largely as the result of socio-economic processes. As already suggested, there are alternative styles of drinking associated with different drinking contexts and with estrangement (alienation) from the social matrix. Some problem drinking is associated with job-related drinking "requirements," some with the unrealistic pressures of job expectations that exceed normal human physical and emotional stress thresholds, and some with the vacuum of meaning and motivation in a majority of contemporary work situations and in the prevailing passive patterns of leisure time utilization.^{25-37, 40}

It might be advantageous at this point to cite a few short life histories from the material in order to add some flesh and blood to the statistical bones. The reader may at least get a feeling for the impact of the contradictory realities people meet within their lives.

Alcoholics in the Labor Force (Cases A through E)

Case A, Independent Entrepreneur, age 32. — A grew up as the youngest son of a wealthy farmer. After completing a few courses in economics and technology he was offered a position in his elder brother's firm. Soon afterward he started a similar business of his own. A has been fairly successful; he

Table 10. — Alcoholism "Hidden" and "Known" to Agencies in Relation to Class, Lundby 1947 Cohort (Men Aged 25 +, July 1, 1972, N = 90).

Class	Alcoholics			Hidden/Known		
	Observed	Expected	Obs/Exp	Observed	Expected	Obs/Exp
Bourgeois	0	0.6	—	1	2.1	0.5
Middle strata	4	4.4	0.9	9	14.5	0.7
Petit bourgeois	6	5.0	1.0	13	16.6	0.8
Working class	11	10.7	1.1	46	35.2	1.3

Table 11. — "Known" Alcoholism, Class and Employment Status,
Lundby 1947 Cohort (Men Aged 25 +, July 1, 1972, N = 69).

Class	No.	Known Alcoholics				Other	All
		Gainfully Employed	Not Gainfully Employed Retired	Early Retired	Unemployed		
Bourgeois	1	1	0	0	0	0	0
Middle strata	9	6	1	2	0	0	3
Petit bourgeois	13	9	1	1	1	1	4
Working class	46	32	4	7	3	0	14
Total	69	48	6	10	4	1	21

earns a lot of money and employs five men. He says that he feels free and not free at the same time. Managing people and machines is a stressful job and he is tired and overworked. He gets tense and irritable and quarrels often with his wife. He has headaches and even periods of depression, when he only wants to sleep. A is sure he won't keep up with the situation too long. He is at ease only on weekends and holidays. He smokes a lot and his alcohol consumption has risen. He drinks whiskey almost every day, often starting in the afternoon. He believes that he needs it for the job — "one cannot be too idealistic about these things you know, it (the alcohol) is necessary when settling transactions and for PR."

Case B, Office Clerk, age 40. — B has been an office clerk in the same sales department for 15 years. Recently the company was sold to a multinational enterprise. B is not at all happy; in fact, he is looking for another job. He says that it is almost a disadvantage to have stayed so long at the same place. The barriers between the age groups seem enormous; he feels old and is afraid of being sidestepped in the competition. B is also fed up with the community that changes so quickly. He says that "technocrats" and "bureaucrats" rule, that the companies are driven too hard and that people get pushed around. B is an outsider, who thinks that he lives in the wrong time. He prefers to sit at home reading Dr. Zhivago and the Russian classics. His idea of a "dream job" would be working in a stuffy old archive messing about papers. Of course, B is disharmonious. He drinks with friends to escape his uneasiness (some people think he has serious alcohol problems already) but he is beaten by his wife when he comes home intoxicated.

Case C, Foreman, age 55. — C has moved several times in his life — "When I got fed up with one place I just chose another . . ." There have always been plenty of jobs. He is single and has no children. Mostly he has lived in hotels, but now he rents a room, and he feels like a member of the family. C is fond of his job. He works no more than 40 hours per week and there are 12 men below him. He says he never gets tired, experiencing "only a little palpitations and tremor at times." With his crew-cut, C looks like an old wrestler. He seems to be earthy and he has no nervous complaints. To the observer, however, he seems rather tense. C's own information actually is completely deceiving. In fact, he is a very heavy drinker and has been treated many times at the hospital where he has

been diagnosed as alcoholic, with blackouts and epileptic seizures.

Case D, Longshoreman, age 28. — D's job is fast, hard and stressful. The pay is by piece-work and everybody has to work as much as the other. D would have preferred a more independent job — "Now everybody controls the other, one never knows how much one gets paid. The machines decide the speed." He has to get up at 4:45 a.m. to catch the bus and he is not home until 6 p.m. Sometimes he falls asleep on the bus, but usually it is shaking too much. Probably he gets too little sleep. Still D wants to be a worker. He thinks it is an honest way of making money. At the same time he hopes to win in the pools in order to be able to do something else, e.g., "drive the bakery car for instance." He is not particularly interested in politics. D's alcohol consumption has been heavy since his years at sea. He drinks with his friends, especially on weekends, and has been picked up by the police several times because of intoxication in public.

Case E, Factory Operative, age 35. — E lives in a small town about 30 kilometers from the Lundby area where he was born. He had worked at the same factory for years but got fed up when it was bought up by a bigger firm. "It was like shit, too much stress and too little money earned. The new place is better, they (the employers) are more understanding." Like his father, E has had drinking problems since his early youth. He has been treated at various mental hospitals because of binges, delirium and other alcohol complications. "It is so indeterminate to be in the hospital, you know, and it is difficult to get a job afterwards." He is concerned about his poor financial condition, but the worst problem for him is his leisure time. He lives for himself, has never been married and has almost no friends. His flat consists of only one room and a kitchen. It is very empty indeed, furnished with only a bed, a table and a chair; there is no television set and the walls are bare. He does not go to pubs or cafes and the streets are empty early in the evenings. Nobody comes to see him. "Nobody wants to deal with me; one is like a hermit." A few months after the interview he began a new period of heavy drinking and he was again taken to the hospital.

Alcoholics Outside the Labor Force (Cases F through L)

Case F, Retired Blacksmith, age 78. — F worked in his workshop until he was 78 and he thinks that perhaps he worked too

Table 12. — "Hidden" Alcoholism, Class and Employment Status,
Lundby 1947 Cohort (Men Aged 25 +, July 1, 1972, N = 21).

Class	No.	Hidden Alcoholics				All
		Gainfully Employed	Not Gainfully Employed Retired	Early Retired	Unemployed, etc.	
Bourgeois	0	0	0	0	0	0
Middle strata	4	3	0	1	0	1
Petit bourgeois	6	3	2	1	0	3
Working class	11	4	6	1	0	7
Total	21	10	8	3	0	11

long. During his long life a blacksmith's job has changed enormously. Formerly farmers came to get their horses shod, wagons and other tools needed to be repaired, and there were lots of various things to do. To be a blacksmith was an art, it was a joy to have made something. Nowadays it is mostly welding and sawing. It is not at all the occupation it used to be. F is now old, but it is obvious that he has been a vigorous man. He has been strong both physically and psychologically and he still has his own will. He tries to trivialize the infirmities of old age that undoubtedly have come. His knees and his hips are deformed and he has to walk with two sticks. "Summer time was idyllic," he says, "but not winter. The temperature changes; there the aches originate." F has been used to a rather heavy alcohol consumption. His wife kept the drinking within "reasonable" limits, but since she died some years ago it has become worse. F probably drinks about 370 ml of alcohol per day; when he was taken into the hospital recently because of his pains and walking difficulties he became confused and delirious.

Case C, Early Retired Motor Operative, age 45. — C worked at a motor company until he had a back operation. After that, he was not able to continue working and after one year of sick leave he was given a disability pension. He spends most of his time on the sofa, but says that he likes it that way. He denies any problems with alcohol — the important information comes from other sources. His former wife, for instance, said that he was very difficult when they were married ("couldn't live without alcohol"). G has been in a mental hospital because of alcoholism and he is under supervision by the Temperance Boards.

Case H, Early Retired Sales Manager, age 49. — H was the manager of an old "family" firm. When the business had to be sold ("because of bad conjunctures and the owner's conservatism"), H was hired to manage a store that belonged to a big franchising corporation. The use of alcohol came early in H's life. He had been a commercial traveler and there had always been a lot of social life and "representation." H realizes that he is an alcoholic. He consumes alcohol in periods of weeks and months, he needs "recovery" drinks and has been delirious. He also has been treated at the hospital because of his drinking.

Case I, Early Retired Office Clerk, age 59. — I has had problems with "nerves" for years and was particularly affected after the death of his mother in 1963 ("the bereavement, but also the family conflicts about the property left"). He had worked as an office clerk during the 1960s but had never been happy with his job. It was boring, uninteresting and badly paid ("one always had a feeling of inferiority"). It's life was outside the job, when he read a lot of novels and papers. The firm was bought by a bigger one and changes followed. I lost his job, and the Labor Exchange did not manage to offer anything comparable. He felt that his nerves were becoming worse. He also got used to a steady alcohol consumption. He could not sleep at night and he had high blood pressure. After two years of unemployment, mostly on sick leave, he retired with a disability pension. He is still a heavy drinker, but he feels better now, and he has been able to throw the sleeping pills away.

Case J, Unemployed Shopkeeper, age 52. — J is pallid and sweating. He talks rapidly and is not fully coherent. This is his story: J had moved to town to take over a grocery. He and his family lived in a flat above the shop. They earned enough the first years and could afford even a few employees, especially in the summer season. Then everything changed; J had to "rationalize" and to borrow money but nothing helped. The supermarkets took over most of the customers. "It is hard, we, the smaller ones, have to close down, nobody cares." J had begun to drink beer in the evenings to bear up and drank more and more but felt only worse. He consulted a physician, who

referred him to the mental hospital, where he stayed many months. When he came back the grocery had been liquidated and the employees had left. J was excluded — "It wasn't fair play. People don't take me for a real human being any more." He has not been able to find a new job and only wants to retire and spend the days drinking beer and watching TV. J also writes short story fragments and talks about strange influences and mysterious conspiracies. J's wife, who had worked together with him in the grocery, works as a cleaning woman and comments: "He is mad, brains all nuts. Too much beer . . ."

Case K, Unemployed Factory Worker, age 41. — K had to leave the open labor market several years ago and works now as a woodsman at a state camp for "sheltered" labor. It is impossible for him to find an ordinary job. The last time he applied for a job was at Volvo in 1970, but they told him that he was too old — he was 39! Life at the camp is O.K. There is not the same hurry and the fellowship is fine. The camp barracks, in which he has his own room, has become his home now. He has just a few things of his own, like a radio, but no furniture and no car ("it would be impractical"). K is divorced and his former wife got everything in the settlement. He has no plans to marry again, though he meets women now and then. He has few other interests and has on the whole limited expectations from life nowadays ("it is too late now"). When he wants a drink he goes down to the town. He drinks a couple of days at a time. From the superintendent information was obtained that K has grave alcohol problems and that it is unrealistic to think that he can leave the camp. "Ask the local authorities, they know everything about him."

Case L, Skid Row Alcoholic, age 31. — The interview took place while L was in prison. He is astonishingly easy to communicate with, but gets rather tense when he tells about his situation. The difficulties started after he had been accused of a sex offense and was sentenced to seven months in prison. People would not accept him afterwards so he left for the city. Formerly L had been trained as a cook but now took work as a market dealer. Like his father, he spent all his earned money on drinking ("was in a constant state of drunkenness"). He was re-sentenced because of violent behavior towards girlfriends, drinking-and-driving, and other crimes. In fact, he has been in prison almost constantly the last few years. He is addicted to drugs and had to be taken to a mental hospital because of an acute narcotic intoxication with symptoms of psychotic delusions. *Comment:* Eliminated from the labor force into the Skid Row "lumpen proletariat"; severe deviant behavior ("mad and bad"); mixed addiction with alcoholism and drugs; institutionalization in prisons and mental hospitals; suicide risk; tendency to paranoid psychotic delusions; bad prognosis.

A belongs to a wealthy family. He has started his own business, which he now manages very actively. An increasing number of people are employed and he earns a lot of money. Still, he is very much in the hands of his customers and feels unfree and overworked. His alcohol consumption is growing as he had found drinking to provide an effective release of tension and relaxation. One might say that A becomes socialized into alcoholism through his work.

B's alienation is very obvious. He lives in a situation of strongly perceived meaninglessness and he is unsatisfied with his whole life. Though he belongs to the middle strata, his career opportunities are poor, and there is a certain risk of unemployment because of further "rationalizations." B suffers particularly from what he feels is the typical mentality at the job: the competition and the stressful contact with others. His drinking provides a pronounced escape function.

C is a foreman. His social position is in the middle level between the owners and the workers. On the other hand, he has no direct supervision or collegialship. He might have found

alcohol use to be a way of releasing tension that accrues from role ambiguity, from competitive relationships, and from simple overloading. Because of increasingly rapid technological changes, many individuals become "obsolete" in terms of possessing skills adequate to perform new tasks.

D lives a typical working class life. He feels exploited and alienated yet still prefers to be a worker (at the same time as he dreams about the big pools win). Admittedly his class consciousness is contradictory. D has been "socialized" into drinking during his years at sea and he regularly drinks a lot even now. The authorities know him as "an alcoholic."

E illustrates that the impact of becoming unemployed and then getting a job only to lose it again has profound consequences. Re-unemployment, perhaps more seriously than "skidding" to a lower skill level, is a major human cost of job displacement. Apathy and alienation tends to increase as unemployment becomes prolonged.⁴¹ Santamaria⁴² has observed that at the time of presentation at the clinic about one-third of alcoholic men are unemployed well before retirement age. There is also a reduced degree of efficiency in many of those who remain employed. Others pass through a variety of jobs which become progressively less demanding of skills, so that finally they are able to find only unskilled jobs.

F, the blacksmith, belongs to a group that now almost has disappeared from the social scene. He has noticed great social changes during his long life and he has tried to adapt to the changing social and economical structures. F's habitual drinking increased to "excessive" when he retired and his wife died. The "social control" loosened somewhat when he was left alone.

G says he prefers to stay at home on his sofa. In changing, giving up, or taking up gainful employment, it is often difficult to distinguish between the individual's choice and the influence of the local or general labor market situation.

H, an early retired manager, is typical of a category of business people who have been squeezed between the capital owners and the forces of the market. His life has turned more and more chaotic because of debts, divorce and frequent changing of jobs. In this situation H might be called a heavy escape drinker in the terminology of Cahalan. As a business executive he also has had the time, opportunity, and privacy to drink heavily without detection or sanction. One sees that various environmental conditions lead to early retirement and unemployment with subsequent psychological maladjustment, i.e., loss of control, alienation, powerlessness, interpersonal problems, and low self-esteem. Also it can be noticed that these psychological problems in turn lead to continued unemployment, and thus a vicious circle ensues that becomes a significant life pattern.⁴³

I illustrates how anger from frustrations of a life spent trying to "make it" is turned on one's self rather than on the social system. *Midtown Manhattan's* specification of the downwardly mobile alcoholic is another extreme form of the same phenomenon.⁴⁴

J, a former shopkeeper, has developed his alcoholism through too much beer drinking. He is now completely "knocked out" of the labor market and waits only for a disability pension. Those around him find him strange and bizarre. Formerly he lived only for his grocery shop, but since he lost it, he has fled into daydreams and paranoid illusions. The stage of unemployment is also a factor. In the early stages there is optimism, but in the later stages apathy, discouragement and resignation may be the rule⁴⁵ (what happens to K for instance). People with negative self-concepts tend to perform in a deviant fashion. If their self-concepts are negative, uncertain or unstable, their behavior shows the same characteristics.⁴¹ There may be a great deal of acting out. Instead of patients coming with a constrained neurosis, they are today less

prone to contain their distress.⁴⁴ Like L they live out their emotions in conflicts, getting into difficulty with other people and creating social tensions. They act out: drinking, drug taking, stealing, promiscuity. In place of complaining, they explode. They live out some of their urges.

The author has examined class as a principal element in the social structure, but the availability of information about class should not obscure other influences among the aged, the unemployed, the deviant, etc.⁴⁷ The present study shows alcoholism to be prevalent in all classes and sectors, but earlier findings that it may be relatively more frequent in the working class gains some support. A significant difference was noted between groups within, versus outside, the labor force. The percentage of alcoholics was 8.0 within the labor force and 13.9 outside the labor force, the latter figure being almost the same as the 13.5 that Murray found among either the unemployable or retired in the United Kingdom.¹⁸ Indeed, the current data on the early retired and the unemployed are striking and warrant further attention as they seem to constitute a particular risk (29.6% alcoholics). The few studies that do isolate rates of severe psychiatric disorders for these groups indicate their preponderance over rates for the employed and the aged groups at any occupational and class level.^{25 36 48} Nordic investigations now show rates much higher than those indicated by the official statistics.^{49 53}

The present Lundby data should perhaps best be accepted as indications rather than as precise measures of what has befallen the probands during the studied period, though the data are in agreement with Edwards et al's⁷ and Wanberg and Horn's⁵⁴ results in treated populations and with Mäkelä's⁹ statement that "in the middle class both the ordinary user of alcohol and the alcoholic enjoy opportunities in abundance to drink themselves to inebriety in a socially accepted way. Thus the occupations of heavy drinking in the middle class do not attract attention in the conspicuous manner of drinking bouts taking place in the working class, which are exceptions to the ordinary routine." The difficulty with prevalence studies is that if a given occupation or class is shown to contain more than the expected number of alcoholics, this does not prove what induces the abuse of alcohol since alcoholics might selectively apply for a certain type of work.^{10 55} Conversely, a job which does not seem to predispose to alcoholism may not appear to do so if all alcoholics in it are automatically dismissed. No doubt there are different "drinking climates" in different occupations. Certain job types may more or less socialize people into heavy drinking, especially jobs that are relatively free of any immediate social control. These same occupations, e.g., dish washing, table waiting, selling and seafaring can also be expected to attract alcoholics when their illness has progressed. Such employee groups "normally" will have high prevalence rates. The point is that it is not the type of work which causes the alcoholism, "but rather that the work is attractive as a solution to a constant problem of survival while drinking."⁵⁵

In order to understand the effects of work and loss of the same one must know something about the significance of the work role itself. Most often work has been

described as the means that provides money, regulates life activity, offers status or social identification, permits association with others and makes available a meaningful life experience. However, there are signs of lesser and declining importance of the work role. Industrial workers often continue working in the absence of financial needs, not because of any intrinsic satisfaction in work, but because there are no meaningful alternatives — a rather tenuous attachment to the work role, it would seem. Also, not enough is known about the costs of “successful” adaptation to a dull job via disengagement. Obviously much of the theoretical writing on meaning of work in this society is applicable only to people who do highly skilled and creative work.^{25 57 58}

The organization of work influences job satisfaction and, thus, the expression of emotional instability and indulgence in habits detrimental to health. The pressures of poverty and unemployment have been supplemented by a discontent which cannot be touched by providing more “prosperity” and jobs, because “these are the very things that produced this discontent in the first place.”⁵⁹

Conclusions

Job satisfaction is rare among persons who, by reason of their background, are excluded from specific occupations for which they are best qualified and who must therefore seek other kinds of employment in which their abilities are often wasted and forgotten. It is to be expected that personal insecurity is almost inevitable in such situations. The current myth that “everybody is alike” leads to increased rates of physical and mental illness, reflecting a sociopathic society.⁶⁰ A growing body of research indicates that as work problems increase there may be a consequent decline in health, family stability, and community cohesiveness, while at the same time there is an increase in drug and alcohol addiction, aggression and delinquency.^{37 61 62} Greater attention to the preventive potential of the work world by researchers, alcoholism specialists, managements and unions should be of the highest priority in this context. The most basic guidance which epidemiology and related studies seem to offer in the planning of preventive alcoholism policies stems from their demonstration of the multifactorial nature of the determinants of drinking and abnormal drinking. Preventive action might focus on the provision of early help for those people who are shown to be particularly prone to use alcohol as a coping mechanism. It might direct attention particularly towards groups such as the unemployed or early retired laborers who have been shown to be at particular risk.^{7 25 63} Employment situations provide some of the most potentially rewarding areas for secondary prevention of alcohol dependence, supporting the view that “an effective industrial alcoholism program may in the long run have a major impact on the total alcoholism program in the community.”⁶⁴

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Prevalence of Known and Hidden Alcoholism in the Revisited Lundby Population

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Summary. Using the new data from a second follow-up of the Lundby 1947 cohort, the aim of the present paper has been to analyze some relationships between "known" and "hidden" alcoholism in a Swedish general population sample. Information was collected by psychiatrists through free, exploratory field interviews checked against documentary records. Alcoholism was medically defined for present purposes. Information was obtained for 98% of the 952 men surviving the cross-section date July 1, 1972. The distribution of alcoholism and other psychiatric disorders in the total population and in age subgroups was analyzed epidemiologically. The "true" prevalence of alcoholism in the adult men was 9.5%, comprising 7.2% "known" and 2.3% "hidden". The proportion of hidden to known cases was 0.30:1 (Temperance Boards 0.87:1, Psychiatric Agencies 0.96:1, Drinking and driving offences 4.3:1). The main finding that about 70% of male alcoholics in Lundby appears to be known to the agencies is at variance with current views that there is an iceberg under the tip, though consistent with Rubington's suggestion that so-called hidden alcoholism is not totally but partially invisible in "welfare" societies.

engenders *hiding*. Rubington (1972) has estimated that most alcoholism is in fact "hidden", that after subtracting cases of alcoholism known to Alcoholics Anonymous and other treatment and correctional agencies still about 2/3 are left, and that of the known alcoholics most are only partially visible. The latter means that only some members of the family, some friends, some agencies and some employers know of the drinking problems. Most visible are the Skid Row alcoholics and the chronic drunkenness offenders.

Because of the "hiding", pathological or otherwise deviant drinking behaviour will never be made totally public even after special enquiry. Imperfect sampling frames and cluster effects, non-response, forgetting and lying are suspected to be the most important factors responsible for a less than perfect coverage in typical drinking surveys (Pernanen 1974), which means that underestimation will be inherent in alcoholism investigations. In Essen-Möller's pioneering study of the Lundby population (Essen-Möller, 1956) only about 20% of abnormal drinkers were known to the local Temperance Boards (Kaij, 1970), and in the follow-up 10 years later Hagnell found that two-thirds were unknown (Hagnell and Tunving, 1972). In other extensive research projects the crude ratio of non-visible problem drinkers has been estimated to be 3.5:1 (Beigel et al., 1974). An increase in alcohol consumption and alcohol-related problems has been reported in most countries during the last decades, and the rates may dramatically increase in the near future (de Lint, 1978). Problems of drinking and driving are said to be worse than ever (B. M. J. 1976). The most significant diagnostic change among the psychiatric services since the 50's has been the great increase in alcoholism (Redlich and Kellert, 1978). More and more patients are admitted to state mental hospitals for treatment of alcoholism; in fact, alcoholism may

'Hidden' alcoholism is the result of an interactional process involving both hiders (alcoholics) and seekers (persons who label and take action against alcoholics).

Earl Rubington

Introduction

Labelling, disapproval, exposure and sanctions are risks for all persons who exhibit the signs of alcoholism. The combination of such negative features sustains alcoholism as a stigmatizing attribute and

Table 1. Crude response rate of Lundby 1947 cohort (1,877 persons alive at cross section date July 1, 1972)

	Men		Women	
	Number	%	Number	%
Total of performed interviews	929	97.6	909	98.3
All non-contacts	22 ^a	2.3	12	1.3
Refusals	1 ^b	0.1	4	0.4
Effective sample	952	100.0	925	100.0

^a 2 persons with diagnosis "alc. chron." (doubtful) 1 "addict" (adequate information from family and registers)

^b No person with an alcohol diagnosis

be the leading cause of admission, accounting for 40% of male admissions in the U. S. A. and at least 20% of male psychiatric inpatients in Sweden (Kittrie, 1976; Statistiska meddelanden, 1978).

Indices of known alcoholism rates such as public drunkenness, arrests, drunken driver convictions and institutionalised alcoholics vary greatly with the differences in functions of police policy, reporting procedures, legal definitions and medical practices. In Bjurulf et al.'s (1971) study of male urban alcoholics from a southern part of Sweden no correlation was found between liver disease and Temperance Boards registrations for instance. Obviously the *perceptions* of these problems leading to research, development of policies and treatment procedures show large variations (Shah, 1969; Kunitz and Levy, 1974; Strauss, 1976; Mäkelä and Viikari, 1977).

The main research questions for this study were the following:

1. What were the rates of "known" alcoholism in the investigated population, and how was it classified, recorded, and treated?
2. What was the rate of "hidden" alcoholism in the same population?
3. What was the proportion of "known" and "hidden" alcoholism in the total population and in different age-groups?

Method

The present study is part of the Lundby Project, which has been going on since 1947 when Essen-Möller and co-workers first made a medical-psychiatric survey of the 2550 inhabitants in a Swed-

ish community. In 1957 another psychiatrist, Hagnell, replicated the sampling and personally interviewed the whole population regardless of where the persons then lived. He also drew on information from the effective Swedish population registers. In both Essen-Möller's and Hagnell's investigations the drop-out rate was extremely low (below 1%). In fact, Hagnell interviewed or was able to gather information from 99.6% of the original cohort. The project has been described and evaluated several times and may be looked upon as an "epidemiological laboratory" dealing with most kinds of psychiatric morbidity (Essen-Möller, 1956; Hagnell, 1968; Leighton et al., 1971; Schwab and Schwab, 1978).

A third sampling has now been carried out. All persons in the 1947 cohort aged 25 years or more at the cross-section date, July 1, 1972 have been investigated. The data collection has been as complete as possible and has been accomplished regardless of the subject's places of residence, thus including urban areas, skid rows, jails and hospitals (Hagnell and Öjesjö, 1975; Öjesjö and Hagnell, in press). The procedure applied has been the following:

1. A combined social-psychiatric and somatic anamnesis of every person was compiled by the research psychiatrists personally.
2. An ordinary "clinical" investigation of the mental state was made together with (1).
3. The material thus obtained was supplemented with documentary records from the local and regional registers.
4. Categorisations were then made upon the entire data on each respondent.

A major methodological advantage in this study is that the interviewers looked for previously specified persons, wherever they lived. Interviews were of a free, exploratory type. It may be important to point out that we intended to get information about all kinds of psychiatric and somatic disorders. The method used was largely of the type used in clinical psychiatry, especially in out-patient work, although probably somewhat more systematic and focussed. The length of the interview was usually about an hour. Establishing good rapport with each respondent was given a high priority in the hope of eliciting valid information. Most of the interviewees were very candid and "difficult" cases were few. It was our impression that on the whole the respondents gave us accurate and honest reports.

Of an estimated total number of 121 male alcoholics in the original 1947 Lundby cohort, 31 died between 1947-1972, i. e. about 25%. In addi-

tion, quite a few of the former alcoholics no longer showed any signs or symptoms. On the other hand there have been a number of new alcoholics to compensate for this "attrition". The complicated dynamics will be the object of further analysis. Of the 952 men in the cohort who had survived to the cross-section date July 1, 1972, 97.6% were interviewed during the period of field research (May 1972 – December 1974).

Field interviews were checked afterwards against documentary records from different official agencies, particularly hospitals and clinics in the region, Temperance Boards local and regional registers and the national criminal register. Documentary data about alcoholism are good in many countries, but the ample Swedish opportunities may be unique in an international perspective. Temperance Boards (now part of the general Social Welfare) have been responsible for the social care and control of alcoholics in the country for the last century and it is to these agencies that the police, the courts and even relatives have reported the known cases of alcoholism. These boards represent "an attempt to bridge the gap between traditional legal solutions emphasising retribution for past and clearly specified acts, and traditional medical solutions more oriented toward broad, future goals of improved physical or mental conditions" (Christie, 1965).

Criteria for defining subjects as "alcoholics"

The selection was based on a clinical definition, i. e. on alcoholism defined as a medical syndrome (Sundby, 1977). Of course, it would have been desirable to be able to follow clinical criteria (see below) strictly, though it was expected to entail too many problems of interview technique in a population such as this one. The task of determining how many alcoholics there are at any given time by anamnestic verification of detailed symptoms in every case is extremely difficult, if not impossible. What the epidemiologist basically needs is a set of behaviour and signs which can be recognised and described by relatively superficial though still systematic methods. Among the essential elements are salience of drink-seeking, increased tolerance, withdrawal symptoms, subjective awareness of compulsion to drink and reinstatement of the syndrome after abstinence (Edwards and Gross 1976). Quasi-qualitative symptom distinctions such as these mentioned can be used as an index-of-pathology when separating the alcoholics from the rest of the drinking population. "Loss of control" or rather impaired control (drinking more and becoming more intoxicated than one intended) exists, but does not distinguish qualita-

Table 2. Prevalence of alcoholism in Lundby 1947 cohort at cross section date July 1, 1972. Absolute numbers and percentage of a total population. Men aged 25+ (N = 952)

Total population		Alcoholics							
of men aged 25+ Age 1972		Abusers		Addicts		Chronics		Total	
	N	n	%	n	%	n	%	n	%
25–29	111	3	2.7	3	2.7	1	0.9	7	6.3
30–39	169	8	4.7	5	3.0	4	2.4	17	10.1
40–49	204	7	3.4	5	2.5	6	2.9	18	8.8
50–59	162	3	1.9	6	3.7	11	6.8	20	12.3
60–69	184	4	2.2	4	2.2	8	4.3	16	8.7
70+	122	6	4.9	4	3.3	2	1.6	12	9.8
Total	952	31	3.3	27	2.8	32	3.4	90	9.5

tively between pathological and non-pathological drinkers (Storm and Cutler 1975). The same may be said about "black-outs", as non alcoholics when drinking large amounts of alcohol also experience amnesia (black-outs) but much less often, as a rule, than the alcoholics (Goodwin et al., 1969). According to the description of alcoholism that was given by Hagnell and Tunving (1972) the following criterias were used in the present investigation. To be counted as a current case of alcoholism in this study required active signs and symptoms on cross-section date July 1, 1972 and/or within the year 1/7 1971–30/6 1972 of:

A. An increased tolerance for alcohol, indicated by an increased consumption and/or

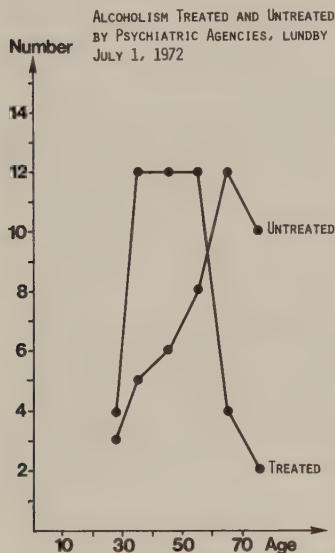
B. Changed behavioural patterns as (1) Trigger mechanism (a pathological desire for alcohol even after ingestion of small quantities – a trigger dose); (2) Recovery requirements (the need of a drink the morning after) and (3) Black-outs (amnesia after alcohol intake).

The alcoholics in the sample were divided into three groups: *Alcohol abusers* (Abu) = with the symptoms described under A above (31 of 90 alcoholics), *Alcohol addicts* (Add) = who have at least two of the three symptoms under B (27 of 90) and *Chronic alcoholics* (Chr) = at least two of the three symptoms under B and also other illnesses such as cirrhosis of the liver (1 of 90), other liver damages (5 of 90), polyneuritis (2 of 90), cerebral deterioration (12 of 90) or delirias (11 of 90). The group of chronic alcoholics as here defined constituted 32 of the 90 alcoholics.

By applying the definitions and adding the time frames "current" (active drinking symptomatology within the year before July 1, 1972) and "ever" (life

Table 3. Alcoholism in Lundby 1947 cohort as known by the psychiatric agencies cross section date July 1, 1972. Absolute numbers. Men aged 25+ (N = 952)

Total population of men in Lundby 1947 cohort		Alcoholics in the cohort July 1, 1972 ^a				Alcoholics known by the psychiatric agencies ^b				Alcoholics not known by the psychiatric agencies			
Age 1972	N	n	Abu	Add	Chr	n	Abu	Add	Chr	n	Abu	Add	Chr
25-29	111	7	(3	3	1)	4	(1	2	1)	3	(2	1	0)
30-39	169	17	(8	5	4)	12	(3	5	4)	5	(5	0	0)
40-49	204	18	(7	5	6)	12	(5	3	4)	6	(2	2	2)
50-59	162	20	(3	6	11)	13	(0	4	9)	7	(3	2	2)
60-69	184	16	(4	4	8)	4	(1	1	2)	12	(3	3	6)
70+	122	12	(6	4	2)	2	(0	1	1)	10	(6	3	1)
Total	952	90	(31	27	32)	47	(10	16	21)	43	(21	11	11)

^a prevalence ^b currently in the files

prevalence of symptomatology and/or official registration) to the population, alcoholism could be investigated epidemiologically. The relatively value free research criteria make it possible to study the disorders in relation to their possible social concomitants without arguing in a circle (Kaij, 1960; Siegler et al., 1968). Alcohol consumption was not registered and it would probably have been unrealistic to do so, due to the denial characteristics among users and abusers of alcohol.

Elaborate statistical procedures were not applied. Investigative goals can probably best be reached through a certain directness and simplicity. (Reid, 1960; Bonger, 1969).

Results

The prevalence of alcoholism differed greatly between the sexes. Only three women were diagnosed as alcoholics on cross-section date July 1, 1972. The results which follow are therefore concerned with the 952 men in the study at that date.

Table 2 shows an estimated "true" prevalence of alcoholism of 9.5% on the basis of current (within last year) symptoms. 3.3% were abusers, 2.8% were addicts and 3.4% were chronic alcoholics. The highest rate, 12.3% was found in the 50-59 year age group (20 of 162). Rates by type of alcoholism showed different patterns for the three operational categories. Abuse was frequent in age group 30-39 (4.7% or 8 of 169) and 70+ (4.9% or 6 of 122). Addiction had an even spread among the ages, representing somewhat less than 3% of the total male population. Chronic alcoholism showed a steady rise in frequency with age from 0.9% (in age groups 25-29) 1 of 11 to a peak value of 6.8% in age group 50-59 (11 of 162).

Table 3 shows the cohort's absolute number of alcoholics known and not known to the local Psychiatric registers (i.e. on the files of psychiatric hospitals and clinics, including out-patients in private practice). Fortyseven of the 90 males with an alcoholism diagnosis (52%) were known and forty-three were not (48%). The distribution of visible alcoholism is of an inverted-U type with a pronounced peak in age group 30-59 (Fig. 1). Ten of 31 abusers (35%), 16 of 27 addicts (59%) and 21 of 32 chronic alcoholics (59%) had come to treatment by these agencies. Alcoholics who were unknown and/or untreated were typically in the 50+ years of age groups. The 47 alcoholics who were known by the Psychiatric Agencies represented 4.8% of the total

Table 4. Alcoholism in Lundby 1947 cohort as known by the temperance board agencies cross section date July 1, 1972. Absolute numbers. Men aged 25+ (N = 952)

Total population of men in Lundby 1947 cohort		Alcoholics in the cohort July 1, 1972 ^a				Alcoholics known by the temperance boards ^b				Alcoholics not known by the temperance boards				Males known by the temperance board but not classified as alcoholics ^c
Age 1972	N	n	Abu	Add	Chr	n	Abu	Add	Chr	n	Abu	Add	Chr	
25-29	111	7	(3	3	1)	3	(1	1	1)	4	(2	2	0)	10
30-39	169	17	(8	5	4)	13	(6	3	4)	4	(2	2	0)	13
40-49	204	18	(7	5	6)	15	(4	5	6)	3	(3	0	0)	11
50-59	162	20	(3	6	11)	11	(2	3	6)	9	(1	3	5)	4
60-69	184	16	(4	4	8)	3	(0	1	2)	13	(4	3	6)	1
70+	122	12	(6	4	2)	3	(1	2	0)	9	(5	2	2)	3
Total	952	90	(31	27	32)	48	(14	15	19)	42	(17	12	13)	42

^a prevalence ^b currently registered ^c i. e. not fulfilling the diagnostic criterias**Table 5.** Alcoholism in Lundby 1947 cohort known for drinking and driving July 1, 1972. Absolute numbers. Men aged 25+ (N = 952)

Total population of men in Lundby 1947 cohort		"True" prevalence of alcoholism July 1, 1972				Known alcoholism because drinking and driving, National Crim. Register (life prevalence)				Males registered because drinking and driving, National Crim. Register; but not fulfilling the diagnostic criterias for alcoholism
Age 1972	N	n	Abu	Add	Chr	n	Abu	Add	Chr	n
25-29	111	7	(3	3	1)	3	(1	2	0)	1
30-39	169	17	(8	5	4)	3	(1	0	2)	3
40-49	204	18	(7	5	6)	5	(0	1	4)	0
50-59	162	20	(3	6	11)	6	(1	2	3)	1
60-69	184	16	(4	4	8)	0	(0	0	0)	1
70+	122	12	(6	4	2)	0	(0	0	0)	0
Total	952	90	(31	27	32)	17	(3	5	9)	6

male population (abuse 1.1%, addiction 1.7%, chronic alcoholism 2.0%).

Table 4 shows the number of alcoholics who were found (known) versus not found (unknown) to local and regional Temperance Boards and Social Welfare Agencies registers (in theory a kind of life prevalence). Forty-eight of the 90 males with an alcoholism diagnosis (53%) were found in the registers, 42 (47%) were hidden. The Table shows for these agencies a "lifetime" prevalence of 5.0% visible alcoholism in the general male population (abuse 1.5%, addiction 1.7%, chronic 1.7%). Fourteen of 31 abusers (45%), 15 of 27 addicts (55%) and 19 of 32 chronics (60%) were known. Of the 42 alcoholics who were not on these registers 11 were below 50 years, 31 were above 50 years. In fact, all the 13 "hidden" chronics were more than 50 years, and 8 were more than 60 years old. On the other hand it was found that the Boards had wrongly labelled 42 persons (4.4 of the total male population). Younger age groups dominated here where data did not meet the research criteria.

Table 5 shows the absolute number of alcoholics known versus unknown because of drunk driving offences (life prevalence). Seventeen of the 90 alcoholics (19%) or 1.8% of the total male population, were on this register taken from the National Criminal Register. The rates were evenly distributed among the age groups 25-59 years. Three of 31 abusers (10%), 5 of 27 addicts (18%) and 9 of 32 chronic alcoholics (28%) were visible here. Six persons were registered but could not be classified as alcoholics (i. e. 25% of labelled persons in this category could not be classified as alcoholics, but 75% could). (The classification by the research psychiatrists was without any primary reference to the drunk driving convictions).

Table 6 details the absolute number of cases known to the different agencies, and the hidden cases, at cross section date July 1, 1972. It was found that 69 of the 90 diagnosed alcoholics (77%) were known; i. e. 7.2% of the adult male population. This "visible" part shows the distribution of an inverted-U that has its peak in the age groups 30-59 as already

Table 6. "Hidden" Alcoholism in Lundby 1947 cohort, i. e. alcoholics non-visible to psychiatric agencies, temperance boards, or criminal registers for drinking and driving cross section date July 1, 1972. Absolute numbers. Men aged 25+ (N = 952)

Total population of men in Lundby 1947 cohort		Alcoholics in the cohort July 1, 1972 ^a				Alcoholics visible by different state agencies ^b				Alcoholics nonvisible to the state agencies			
Age 1972	N	n	Abu	Add	Chr	n	Abu	Add	Chr	n	Abu	Add	Chr
25-29	111	7	(3	3	1)	7	(3	3	1)	0	(0	0	0)
30-39	169	17	(8	5	4)	16	(7	5	4)	1	(1	0	0)
40-49	204	18	(7	5	6)	16	(6	5	5)	2	(1	0	1)
50-59	162	20	(3	6	11)	19	(3	6	10)	1	(0	0	1)
60-69	184	16	(4	4	8)	6	(1	2	3)	10	(3	2	5)
70+	122	12	(6	4	2)	5	(1	2	2)	7	(5	2	0)
Total	952	90	(31	27	32)	69	(21	23	25)	21	(10	4	7)

^a prevalence^b ever registered**Table 7.** Absolute numbers of identified male alcoholics in Lundby cohort by type of contact cross section date July 1, 1972 (N = 90)

Type of contact	Number of hidden alcoholics ^a	Number of registered (known) alcoholics	Hidden Known ratio
Psychiatric agencies	43	47	0.96:1
Temperance boards	42	48	0.87:1
Drinking and driving	73	17	4.3:1
Total number of labelled alcoholics		69	0.30:1

^a i. e. alcoholics not identified in these registers

illustrated. With social class data added, two-thirds (46 of 69) represented working class groups, while one-third were non-working class. Most visible were the addicts and chronics (the alcohol sick persons). The known cases constituted 48 of a total of 59 cases (81%). Twenty-one of 90 alcoholics (23%) were "hidden" from the agencies; i. e. representing 2.4% of the total male population. This category was found to have its peak in the 60+ year age groups, where the number was found to be 17 of 28 (61%) representing 5.6% of all men in this age. Here no obvious class difference could be established. About a half (11 of 21) belonged to the working class categories, while the other half represented various non-working class groups. In the "hidden" groups 48% (10 of 21) were defined as abusers, while 52% represented the more severe forms.

The main aim of this study has been to investigate the relative proportions between hidden and known alcoholism in the total population and in different

age groups. Table 7 shows the absolute numbers of identified alcoholics in the Lundby Cohort on cross section date July 1, 1972, by type of contact. The "true" number of alcoholics in the male population was estimated to be 90 persons. Of these 47 were known by the psychiatric agencies, which gives a ratio of hidden to known alcoholics of 0.96:1, 48 were known by the Temperance Boards, which gives a ratio of hidden to known alcoholics of 0.87:1, and 17 were known in the Criminal Registers because of drunken driving, which gives a ratio of hidden to known alcoholics of 4.3:1. The total number of labelled alcoholics in the male Lundby population was 69, which gives the general ratio of hidden to known alcoholism as 0.30:1.

Discussion

The prevalence of alcoholism can be estimated directly or indirectly. The earlier rates-under-treatment studies were mainly limited to the notoriously unreliable data from visible and selected populations in hospitals and jails, but the early 1960s witnessed a breakthrough, as more and more investigators began to apply epidemiological techniques, field investigations and household interviews (Strauss, 1976). Estimating alcoholism in epidemiological studies is in part determined by the method of sampling, in part by the supplementary information which is available. The general approach, however, should be as inclusive as possible (Gibbins, 1954; Popham, 1970; Cahalan, 1972) and the most successful surveys have been those that have concentrated on *complete* coverage of all cases of alcoholism in the studied populations. Such an approach minimizes the bias that one is likely to obtain when one selects only a sub-sample. Other advantages with the complete

population surveys are that the diagnostic standards for inclusion can be prearranged and much more collateral evidence on individual characteristics and social background can be collected. The total number of known cases can be calculated as well as the officially unknown or "hidden" cases. For a complete ascertainment of "known" cases it is necessary to go beyond medical and psychiatric sources since conditions such as alcoholism and behaviour disturbances are also dealt with by a great variety of non-medical agencies (WHO, 1967). Another advantage with total population studies is that "behaviour-producing" and "rate-producing" processes can be investigated within the same framework (Kitsuse and Cicourel, 1963).

Clark (1966) has observed how highly dependent the results are on the definitions employed: according to the chosen criteria the prevalence rate of "current and severe" drinking varied between 3 and 62 per 1000, and if the criteria were made even more lax and any indication of either past or present, moderate or severe problems was accepted, the prevalence was 272 per 1000. It has been shown that "heavy drinkers" identified by different methods are frequently not the same subjects, as pathological drinking may be related to varying complications in different people and differently evaluated in the various branches of medical and social care (Bjurulf et al., 1971; Streissguth et al., 1977). On the other hand, the convergence between self-report data and external criteria is sometimes impressive. In Bailey et al.'s (1965) New York survey for instance, it was noted that virtually no cases picked up through the survey appeared in the registers under diagnoses other than alcoholism. Also Edwards et al. (1973) report that no man contacted was identified by the agencies without also being detected by direct interviewing. In the Lundby cohort with the use of a clinician's free exploratory interview and with very few of the population not personally interviewed we believe that most alcoholics can be diagnosed. The sample can be regarded as a representative selection of the general population as far as age distributions and other demographic aspects are concerned. While it is not random, it is at least representative of the alcoholic population as defined. If it is biased it is towards the later stages of alcoholism. As noted by Phillips, this is understandable because most definitions of alcoholism either explicitly or implicitly relate to observable behavioural factors (Phillips, 1976).

On most dimensions there are considerable difficulties in finding natural cutting points to separate normal drinkers from alcoholics. The drinking habits of many labelled alcoholics do not radically differ from those prevailing in the surrounding general

Table 8. Classification of alcoholism in Lundby 1947 cohort at cross section date July 1, 1972. Men (N = 952)

	Results of classification	
	Alcoholism	Non-alcoholism
Initial screening interview	85	867
Combined evaluation (interview plus official sources)	90	862

population, and symptoms like black-outs or loss of control provide no stable dividing criteria (Mäkelä, 1975). Nevertheless, we believe that the data are good enough to give a fairly clear picture of the overall situation, and may also be used for comparisons between different age sub-groups. We think it is very important that in the Lundby project there has been a continuity both in investigators and in design since the beginning.

The "true" prevalence of current (active within the last year) alcoholism among the adult men was found to be 9.5% categorised as abuse (3.3%), addiction (2.8%) and chronic alcoholism (3.4%). Of the total number of alcoholics so defined there was an uncertainty with about 12% in the group (11 of the 90 "alcoholics"), most of which belonged to the "abuse" category (6 men), a few to the "addicts" (4 men) and 1 who was a probable "chronic". In these cases where it was difficult to estimate the activity at the cross section date, two persons were living in homes for the aged and possibly under control there, one person was ill with cancer of the oesophagus, and one was paralysed after a stroke. A questionable case was a former sailor who told us that he drank only at sea, while six former alcoholics said that they had no problem with alcohol any longer and we had no other information to the contrary.

Abuse was most frequent in age groups 30–39 (4.7%) and 70+ (4.9%). The addicts were evenly dispersed between the age groups, and represented slightly less than 3% of the male population; chronic alcoholism showed a steady rise in frequency with age from 0.9% in age group 25–29 to 6.8% in age group 50–59.

"Known" alcoholism (persons registered and still on the files of the different agencies) was 7.2%: 2.2% belonged to the abuse category, 2.4% were considered addicts and 2.6% were chronics. The "hidden" or non-visible alcoholics were 2.4% of the total adult male population, thus representing a *smaller* part. The ratio of $\frac{\text{hidden}}{\text{known}}$ was 0.30:1 (Temper-

ance Boards 0.87:1, Psychiatric Agencies 0.96:1, Drunk Driver Criminal Register 4.3:1). This "visible" part has the distribution of an inverted-U with a peak in the age groups 30–59 as would be expected from earlier research (Edwards et al., 1973). The finding that about 70% of alcoholics in Lundby appear to be known to agencies is perhaps surprising, but still consistent with Rubington's statement that alcoholism is not totally but only partially visible in today's "welfare" societies. Most of the known alcoholics were found to belong to the working class groups, something that would be expected from earlier experience, i. e. that the working classes are over-represented among labelled alcoholics. Nonworking class groups run considerably less risk of the more extensive measures of "supervision" and "institutional care" even if they are obviously heavy drinkers (Bjurulf et al., 1971; Mäkelä, 1975; Larsson and Sjöström, 1979).

The register information from the psychiatric agencies was found to be particularly fruitful. About 52% of the alcoholics were estimated to be known through these registers. This is much more than Helgasson (1977) recently reported from Iceland, but of course differences are to be expected even between the Nordic countries. The age distribution of psychiatrically treated alcoholics was of a marked inverted-U type with a peak in age groups 30–59, in agreement with usual findings that clinical populations of alcoholics are around 40 years (Åmark, 1951; Brenner, 1973; Helgasson, 1977).

Of the Lundby alcoholics 19% were registered because of drinking and driving offences and of persons so registered 74% could be independently diagnosed as alcoholics. The findings support Åmark's (1951) earlier suggestion that even a first conviction for drunkenness may be a sign of incipient abuse or of already manifested alcoholism. It is also a strong indication for preventive measures (Bjerver, 1972; Lassenius, 1974; B. M. J., 1976). The rates were evenly distributed among the age group 25–59 but with no cases more than 60 years of age. Recently von Hofer (1977) has found that 50% of sentenced Swedish drunken driving offenders are under 30 years of age at the time of the offence. According to this author there is a high risk of relapse into different forms of crime sufficiently serious to warrant registration in the criminal registers.

In the Lundby sample 8 men had been sentenced sometime in their life because of a violent crime, *all* of whom could be categorised as alcoholics at cross-section date July 1, 1972 (6 chronic, 1 addict, 1 abuse). In other words, 9% of the total number of alcoholics had a known violent crime in their anamnesis. Among the alcohol sick (addicts and chronics) below 50 years of age a third had been sentenced because of some sort of violence, irrespective of

whether the crimes were committed while they were drunk or not. It is often suggested that the frequency of criminality among alcoholics is considerably higher than in the general population, though the epidemiological facts to prove it have been scarce (Sundby, 1967; Böker and Häfner, 1973). The Lundby data here presented may be used as a support for an extremely important correlation between alcoholism and violent criminality (Guze et al., 1969; Hancock, 1977; Sundby, 1977; Steadman et al., 1978).

Concluding Remarks

Alcohol control reflects the roles of the doctor (taking care of the drinker), the judge (decision on application of force), the teacher (alcohol education), and the politician (alcohol regulation in the municipality) (Christie, 1965). Rates of "known" alcoholism from different agencies are expressions of *agency realities*, i. e. of *agency awareness* and of *prevalence of labelling* rather than of actual "true" prevalence. The "facts" are not estimates of same phenomena when seen in this perspective; they are different by definitions and they are rooted in different sets of practical and ideological assumptions (Edwards et al., 1973; Strauss, 1976). These cultural conceptualisations have an influence both on the experiences of individual drinkers and on official statistics on consequences of drinking. As Mäkelä and Viikari argue, if alcohol is viewed as a problem of public order and security, the main responsibility for alcohol control falls upon the police and social authorities. If, on the other hand, alcohol is viewed as a problem of productivity, strict labour discipline is maintained and industrial alcoholism programmes are launched, while the marginal alcoholic section of the population is liable to be forced to Skid Row. If, again, considerations of public health are at the forefront, the injurious effects of drink are regarded as belonging to the field of operations of public health authorities. Correspondingly, individual drinkers become registered as public nuisances for their performance at work, or as patients at hospitals (Mäkelä and Viikari, 1977).

Probably people recognise alcohol problems only as much as they are willing to, and they deny the rest in the very same way in which the excessive drinker denies his drinking habits. Thus, labelling a phenomenon like alcoholism as illness means in a certain sense merely that the medical profession recognises it as such and is willing to attempt treating those who have drinking problems.

Zax et al. (1967) gave a crude rate of 1% registered male alcoholics in a case finding survey based on psychiatric registers. Edwards et al. (1973) obtained 0.86% alcoholics from a multiple agency

Table 9. "Visible" prevalence of alcoholism in men aged 20+. Recent studies

Reference	Country	Sample	Size (men)	Labeller (type of agency)	Prevalence in percent (cross-sectional)	
Zax, M. et al. (1967)	U. S. A.	Case-finding survey	2319	Psychiatric register	1.0 (crude rate)	
Hagnell, O., Tunving, K. (1972)	Sweden	Total population survey (Lundby)	950	Temperance boards	3.79	
					chronic alcoholism	1.16
					alcohol addicts	1.26
					alcohol abusers	1.37
					total number	3.79
Edwards, G. et al. (1973)	England	Multiple agency reporting survey	700	Psychiatric agencies, courts etc.	0.86 (crude rate)	
National Board of Health and Welfare (1978)	Sweden	All psychiatric - agencies reporting (28 000 beds)		Psychiatric hospitals and clinics	0.37	
					chronic alcoholism	0.20
					other	0.17
					total number	0.37
Hagnell, O., Öjesjö, L. (1979)	Sweden	Total population survey (Lundby Cohort)	952	Psychiatric, temperance, criminal registers	7.2	
					chronic alcoholism	2.6
					alcohol addicts	2.4
					alcohol abusers	2.2
					total number	7.2

reporting survey and Wilkins estimates the prevalence rate for alcoholics (present and past, both sexes) to be 1.82% of the practice population aged 15-65 years (Wilkins, 1974). The Swedish National Board of Health and Welfare report 0.3% based on psychiatric in-patients only (Statistiska Medelanden, 1978). Hagnell's 1957 data based on Temperance Board registers showed the rate of registered alcoholism to be 3.7% (Hagnell and Tunving, 1972), but since then the share of the health system in the regulation of alcohol problem has considerably increased (Lassenius, 1974). Details are shown in Table 9. It is concluded that the high rate of known alcoholism (7.2%) that has now been demonstrated for the Lundby men largely arises from the complete nature of the investigation. The finding that about 70% of alcoholics in Lundby appear to be known to agencies also casts some doubts on current generalisations about "an iceberg under the tip".

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Incidence of Alcoholism among Men in the Lundby Community Cohort Sweden, 1957-1972

Probabilistic Baseline Calculations

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SUMMARY. *The annual age-standardized incidence rate of alcohol dependence among men in the Lundby community cohort prospectively observed during 1957–1972 (N = 2550) was 130 per 100,000 (including "alcohol abuse," 300 per 100,000). The individual expectancy of developing alcohol dependence in a lifetime was 8.6% (including "alcohol abuse," 19.3%). Of the cumulative probability, 78% was manifested by those under 40 years of age.*

PROSPECTIVE longitudinal studies are particularly useful in ascertaining the incidence of a disease—the number of new cases that emerge within a specified time interval. The approach is also most suitable for the elaboration of methods of early detection: A population is studied intensively early in life and then followed until some members develop the condition under study. By going back to the original assessment it becomes possible to identify individual and environmental characteristics that distinguish those who later succumb to the illness from those who do not.

In view of all the difficulties involved in longitudinal investigations, it is hardly surprising that such studies are rare. The first major attempts to estimate the size of the problem of alcoholism with this epidemiological method were made by Klemperer (1), who in 1933 estimated the lifetime expectancy of alcoholism in Germany to be 1.2%, and by Fremming (2), who in 1947 found a life expectancy of 3.5% among men and 0.1% among women in

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Denmark. Helgason (3) in 1964 made similar estimations for the population of Iceland. Here the expectancy of alcoholism, classified as alcohol addiction, habitual excessive drinking and irregular excessive drinking up to the age of 60, was 9.78% in men and 0.50% in women.

The lifetime expectancy for alcoholism among men is now generally estimated to be between 3 and 9%, depending on the criteria used, and for women the range is between 0.1 and 1%. The onset is supposed to take place in the late teens and early twenties, the course is individual, and the alcoholic may not be fully aware of any dependence on alcohol until his thirties. Patterns of pathological drinking are also variable, and one should avoid associating any particular pattern exclusively with alcoholism (4-6).

For the present study the main research questions were the following: (1) What was the number of new cases per year during the period under study (incidence)? (2) What was the probability that an individual would develop the disorder during his lifetime (expectancy)?

METHODS

Material

Our data are taken from the Lundby Study, a longitudinal investigation which has been proceeding since 1947 (called Time 0 for the present purpose). Essen-Möller (7) and coworkers were the first to make a medical-psychiatric census investigation (1 July 1947) of all the inhabitants ($N = 2550$) in the Lundby community, a geographically defined area situated in a southern district of Sweden. In 1957 (Time 1) Hagnell (8) added the prospective dimension to the originally crosssectional design, when he personally reinterviewed the population. The interview drop-out rate was 1% in both studies, and information about the deceased was collected.

A second follow-up has now been accomplished. The 1877 probands of the original cohort, 952 men and 925 women who were still alive in 1972 (Time 2), were resurveyed during 1972-1974 with similar methods, once again with almost 100% participation (9, 10).

The number of farmers, farm laborers, and self-employed artisans has declined appreciably since the project started, and the number of factory workers and those employed in service and administration has increased, "as the close-knit self-sufficient provincial village loosened its ties and reached out to take part in the modern world" (11). Post-war Sweden has been characterized by a strong urbanization, and today the majority of the Lundby population, like 80% of all Swedish citizens, lives in urban agglomerations.

Procedure

Fundamentally, the 3 investigations in 1947, 1957 and 1972 were carried out in the same way. In order to collect and evaluate the information the following methods were used: (1) Life histories, social-psychiatric and somatic, through field notes at Time 1 and Time 2, taken by a research psychiatrist (L.Ö. and O.H.) at face-to-face interviews of about an hour's duration with as many persons as possible from the 1947 cohort, and in most cases including contacts with other family members. (2) Psychiatric status at Time 1 and Time 2 interviews. (3) Objective data collected from the following informants and agencies: Parish and central population registration; the Swedish Central Bureau of Statistics; Social Insurance Office; Inland Revenue Office; criminal register; county temperance boards; hospital case notes, psychiatric; hospital case notes, nonpsychiatric; key informants; official death certificates; autopsy reports; regional archives; postal investigation in 1962. (4) Final evaluations and classifications made by research psychiatrists (L.Ö. and O.H.; O.H. had also made the Time 1 evaluations).

The collection of data was made as complete as possible. The field work took place in the probands' places of residence, at their jobs, and in hospitals, prisons, and other institutions. The interviews were of a relatively free, explorative and open-ended nature, though focused on the psychiatric and medical research questions and on the individual's life situation (work, family, and home), preferably in the words of the participants themselves. The method was the one used in clinical situations, particularly with psychiatric outpatients, but also in some anthropological studies. (Mail and telephone surveys probably do not turn out as well because of the great importance of having an interviewer fulfill probing and reinforcing functions.) The very detailed data cumulated through the three surveys also gave opportunity to estimate qualitative aspects, at least of the broader issues. Supplementing interviews with register data and other outside verification should have helped compensate for the greater likelihood of recent and more severe disorders being recalled at an interview than earlier and milder ones.

Statistical Methods. Our data contain information about the probands for a 15-year period commencing on 1 July 1957 (Time 1). The incidence rates were assumed to be homogeneous, i.e., constant within the period, but age-dependent; more precisely, to be constant within each 10-year age interval. Every such age-specific incidence rate was estimated by the occurrence-exposure rate, i.e., by dividing the number of new cases occurring in an age group by the amount of time under risk in that group. The latter quantity was computed by summing the length of time the proband spent in the respective age group during the time interval under study. A proband ceased to contribute to the sum when he died, and similarly when he acquired the disorder. The reason for the latter restriction is that we consider only the first occurrence.

The age-specific incidence rates were converted into probabilities using the formula $p_i = 1 - e^{-10\mu_i}$, where μ_i is the incidence (dimension: year⁻¹), and where p_i is the probability of acquiring the disease during the relevant 10-year age interval. Finally, the cumulative probabilities (p_i) of acquiring the disease during the first $10 \times i$ years of life were calculated as $1 - (1 - p_1) \times (1 - p_2) \times \dots \times (1 - p_i)$ or, equivalently, as $1 - e^{-10(\mu_1 + \mu_2 + \dots + \mu_i)}$.

The age-specific incidence rates were also summarized as age-standardized rates; each such rate is a weighted average of age-specific rates, the weights being given by the age structure of the Lundby population on 1 July 1947.

Definitions

Alcoholism. The selection of cases was based on an epidemiological operational definition of alcoholism from DSM-III (12) in two forms: (1) Alcohol dependence (DSM-III 303.0) with a persistent pattern of withdrawal symptoms, craving, shakes; and (2) "alcohol abuse" (DSM-III 305.0) with a pattern of heavy (excessive) drinking, frequent intoxications, and a change in tolerance.

An individual was included if he met the criteria at any time period between 1957 (Time 1) and 1972 (Time 2). In addition, an estimated duration of disturbance of at least a year was needed. Consumption data were not recorded systematically, but alcohol-related social problems such as work impairment, traffic difficulties, and any information about medical complications such as cirrhosis of the liver, brain damage, delirium tremens, convulsions, hallucinations, etc. were. The use of separate though not entirely independent criteria in the analyses will provide some sense of the robustness of its generality.

"Alcohol abusers" can often be presumed to be in the acquiral phase, that is, in an early stage of alcoholism. They are heavy drinkers and some have the "cardinal" symptoms bordering on alcohol dependence. On the other hand, this special group cannot be strictly separated from "normal drinkers" or those whose misuse of alcohol results in, for instance, only social complications.

Incidence. Incidence refers to the number of new cases per year in the population between Time 1 and Time 2. It is given as annual incidence rate per 100,000 specific population. By using those studied in 1957 (Time 1) who had not developed any alcoholism, one escapes the bias inherent in nonprospective studies (i.e., the examiner at Time 1 did not know which of the probands would develop alcoholism up to Time 2).

Expectancy. Disease expectancy (morbidity risk) is defined as an estimate of the accumulated probability that a proband will develop the disease in question at some time during his life if he survives the period of risk for the disease; the disease expectancy at a very high age is sometimes called the life expectancy of acquiring the disease.

TABLE 1.—*Incidence and Risk ($\pm$ SD) of Developing Any Alcoholism among Males in the Lundby Community Cohort, 1957-1972*

Age Class	Observation Years under Risk	Cases	Annual Incidence*	Cumulative Probability
0-9	0	0		
10-19	1049.4	7	.0067 $\pm$.0025	.065 $\pm$.024
20-29	2421.0	14	.0058 $\pm$.0015	.117 $\pm$.026
30-39	2578.6	10	.0039 $\pm$.0012	.151 $\pm$.027
40-49	2281.1	5	.0022 $\pm$.0010	.169 $\pm$.028
50-59	2481.2	2	.0008 $\pm$.0006	.176 $\pm$.028
60-69	1904.1	2	.0011 $\pm$.0007	.184 $\pm$.028
70-79	995.6	1	.0010 $\pm$.0010	.193 $\pm$.029
80 +	564.4	0	.0000 $\pm$.0000	.193 $\pm$.029
0 +	14275.4	41		

* Age-standardized: .0030 $\pm$.0005.TABLE 2.—*Incidence and Risk ($\pm$ SD) of Developing Alcohol Dependence among Males in the Lundby Community Cohort, 1957-1972*

Age Class	Observation Years under Risk	Cases	Annual Incidence*	Cumulative Probability
0-9	0	0		
10-19	1064.3	2	.0019 $\pm$.0013	.019 $\pm$.013
20-29	2527.0	10	.0040 $\pm$.0013	.057 $\pm$.017
30-39	2751.4	4	.0015 $\pm$.0007	.070 $\pm$.018
40-49	2434.5	3	.0012 $\pm$.0007	.082 $\pm$.019
50-59	2600.4	0	.0000 $\pm$.0000	.082 $\pm$.019
60-69	2033.6	1	.0005 $\pm$.0005	.086 $\pm$.020
70-79	1111.1	0	.0000 $\pm$.0000	.086 $\pm$.020
80 +	597.0	0	.0000 $\pm$.0000	.086 $\pm$.020
0 +	15119.3	20		

* Age-standardized: .0013 $\pm$.0003.

RESULTS

Tables 1 and 2 show the annual age-specific and accumulated risk of developing alcoholism (alcohol dependence and "alcohol abuse") for the first time. The calculations are based on approximately 15,000 observation years. New cases among women were too few for statistical treatment.

The incidence rate for alcoholism among males in the form of alcohol dependence was 130 per 100,000, and for all alcoholism 300

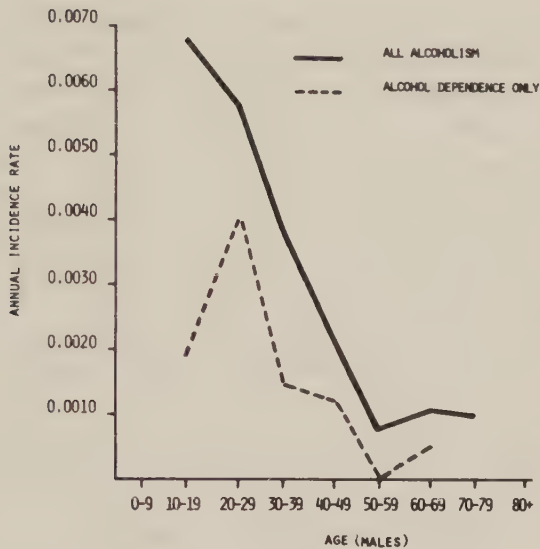


FIGURE 1.—Annual Incidence, by Age, of Developing Any Alcoholism in the Male Lundby General Population Cohort, Based on Data from the Prospectively Observed 15-Year Period of 1957-1972

per 100,000. The estimated morbidity risk (expectancy) measured as accumulated probability, i.e., the percentage of men who have developed alcoholism or will develop it at some time during their lives, was 19.3 (alcohol dependence, 8.6).

The incidence rates were highest in the younger age groups. We found that 61% of the probability of developing any alcoholism was manifested before age 30, and that 78% of the probability was manifested before age 40; there was some risk also after age 40, and this risk remained up to a very high age (Figure 1).

DISCUSSION

We have reported a prospective longitudinal study of the incidence of alcoholism (alcohol dependence and "alcohol abuse") in a total population (community) cohort. From our data lifetime expectancy baselines can be calculated, a measure that can be useful for international and historical comparisons. Because of the longitudinal nature of the data, their collection in a natural setting, and the richness of life-history data, and because of the consider-

ation of alcoholism according to the types delineated in DSM-III, these findings should overcome most of the objections made to earlier work in this field. Still, there are unsolved methodological problems. No matter how alcoholism is conceptualized, some degree of arbitrariness will remain in its operational definition and measurement. It is also obvious that the categories and subcategories of the study are sometimes very sparsely represented.

Reichenbach (13) has said that it is the concept of probability which constitutes scientific evidence. However, although risks can be calculated on samples of almost any size, if the number of cases is small their precision in the prediction of future risks is low. Another problem with longitudinal studies is that by the time they are brought to some point of completion they may provide results valid only about a time or circumstance that might in fact never recur (14). If, for example, the incidence of a condition begins to rise among new cohorts of later birthdate, the rise will be reflected in the crosssection curves, tending to create age peaks in the newly affected younger age groups, but without raising the rates among the old (15, 16). What constitutes knowledge, here, must hence be explained and understood in light of the social formation and the historical period in which it emerges.

The calculated annual incidence rate for any alcoholism among males in Lundby was 300 per 100,000 in the period under study (1957-1972). The highest-risk group appears to be teenagers, up to 19 years old (annual incidence 670 per 100,000). In an earlier investigation Globetti (17) argued that at least part of this deviant drinking can be explained in terms of where the teenagers live, along with the way many adolescents use deviant acts to test out the limits of the adult world. This interpretation gains support from Donovan and Jessor's national survey (18); they suggest that adolescent problem drinking is an integral part of a general adaptation to self, to others, and to circumstances, rather than an isolated activity. For some of these young people, however, this beginning stage of their drinking careers may be an incipient phase of what eventually becomes adult problem drinking. Research in this area has a practical potential for the development of programs for the prevention of alcoholism (19).

Confusion exists as to whether the elderly problem drinker is "the young alcoholic grown old" or whether he represents an onset of alcoholism in older age (20). Our findings were that in the Lundby cohort 61% of the probability was manifested before age 30, and

that 78% of the probability was manifested by "early alcoholics," i.e., before age 40. The results are in accordance with other findings (21-24): the incidence of alcoholism after the age of 35 drops sharply while, on the other hand, the search for medical help increases.

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Class variations in the incidence of alcoholism in the Lundby Study, Sweden*

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Summary. The annual incidence of alcoholism among males in the Lundby Community Cohort ($n = 2,550$), prospectively observed during the period 1957–1972, was found to be highest for workers (340 per 100,000), which was much higher than for self-employed businessmen, artisans, and farmers (230 per 100,000) or for ‘white collar’ employees (190 per 100,000). The findings support earlier suggestions that class creates alcoholics at different rates through their general class situations.

cohort analyses offer better chances of distinguishing between nature and nurture, and of correlating changes in the various incidence rates with the social history of the period. The specific research questions for the present study were:

Can the social concept of class be used as a predictor for alcoholism, and can class-specific incidence rates and expectancies be calculated?

If so, which classes are especially at risk?

Sample and methods

Sample

The data have been taken from the Lundby Study, a longitudinal investigation which started in 1947 (called Time 0 for the present purposes) and is still being continued. Essen-Möller and co-workers were the first to make a medico-psychiatric census investigation (1 July 1947) of all the inhabitants ($n = 2,550$) in the Lundby community, a geographically defined area situated in a southern district of Sweden. In 1957 (Time 1) Hagnell added the prospective dimension to the originally cross-sectional design, when he personally re-interviewed the population. The interview drop-out was 1% in both studies, and information about the deceased was collected (Hagnell 1981).

A second follow-up has now been accomplished. The 1,877 probands, 952 men and 925 women of the original cohort who were still alive in 1972 (Time 2), were resurveyed during 1972–1974 with similar methods, and with 98.0% participation (Öjesjö 1980b).

Demographically, the number of farmers, farm laborers, and self-employed artisans has declined appreciably since the project started, while the number

Introduction

Apart from the drinking itself, the most common concomitant of problematic alcohol-intake seems to involve various socioeconomic dimensions. People in “lower” social positions have shown higher rates in most investigations, and they tend to get into trouble out of all proportion to the frequency with which they drink (Mello 1981; Öjesjö 1980a; Parker and Brody 1980; Pearlin and Radabaugh 1976; Smart 1979).

If cause and effect are to be clarified, it is necessary to investigate where these “problem populations” come from, and to look further into how they express themselves in a changing social structure. In cross-sectional studies the causal direction of the association is not revealed. Prospective studies such as

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of factory workers and those employed in service and administration has increased, "as the close-knit self-sufficient provincial village loosened its ties and reached out to take part in the modern world" (Leighton et al. 1971). Post-war Sweden has been characterized by a strong urbanization and today the majority of the Lundby population, like 80% of the Swedish citizens, lives in urban agglomerations.

During the period observed (1957–1972) the total consumption of alcohol has increased considerably in Sweden (from 5 to 8 l per person per year), (Nilsson and Rydberg 1979).

Methods

Fundamentally, the investigations in 1957 and 1972 were carried out in the same way. In order to collect and evaluate the information the following procedure was used:

1. Sociopsychiatric and somatic life histories were taken by a research psychiatrist (LÖ and OH) at Time 1 and Time 2, during interviews about 1 h long.
2. Psychiatric status at Time 1 and Time 2 interviews.
3. Register information and other objective data collected from key informants and agencies as follows:

Parish and Central Population Registration
The Swedish Central Bureau of Statistics
Social Insurance Office
Inland Revenue Office
Criminal register
County Temperance Boards¹
Hospital case notes, psychiatric
Hospital case notes, nonpsychiatric
Key informants
Official death certificates
Autopsy reports
Regional archives
Postal investigation in 1962.

4. Final evaluations and classifications made by research psychiatrists (LÖ and OH, where OH had also made the Time 1 evaluations).

Data collection was as complete as possible. The field work took place in the probands' homes, at their place of work, in hospitals, prisons, and other institutions. The interviews were of a relatively free, exploratory, and open-ended nature, though focused on psychiatric and medical research questions and on the individuals' life situation (work, family, and home), as described by the participants themselves.

¹ *Temperance Boards* (part of the general social welfare) have been responsible for the social care and control of alcoholics in the country for the last century, and the police, courts, and even relatives report known cases of alcoholism to these agencies.

The method used was the one used in clinical situations, particularly with psychiatric outpatients, and also in some anthropological studies. Mail and telephone surveys are probably less satisfactory, as it is very important that the interviewer probe and reinforce the respondent's replies.

The very detailed data accumulated in the three surveys provided an opportunity to estimate qualitative aspects too, at least the broader issues. Supplementing interviews with register data and other outside verification should help compensate for the fact that recent and more severe disorders are more likely to be recalled at an interview than earlier and milder disorders.

Statistical methods

For a description of the statistical technique used, see Öjesjö et al. (1983).

Definitions

Alcoholism

The cases were selected on the basis of an epidemiological operational definition of alcoholism in two forms, alcohol dependence and alcohol abuse:

1. Alcohol dependence (DSM III 303.0) with a persistent pattern of withdrawal symptoms, craving, and shakes
2. Alcohol abuse (DSM III 305.0) with a pattern of heavy (excessive) drinking, frequent intoxication, and a tolerance change

Individuals were included if they met the criteria at any time period between 1957 (Time 1) and 1972 (Time 2) and if the disturbance had lasted at least one year. Consumption was estimated from patterns of drinking; alcohol-related social problems were also registered like work impairment and traffic difficulties, as well as information about medical complications such as cirrhosis of the liver, brain damage, delirium tremens, convulsions, or hallucinations. Two separate, though not entirely independent, criteria were used in the analyses to provide some evidence about the validity of the results. It is our understanding that the medical definition used of alcoholism makes it possible to study the disorder in relation to the social concomitant without circular reasoning (Öjesjö 1980b).

Incidence and expectancy

Incidence refers to the number of new cases per year in the population between Time 1 and Time 2. It is

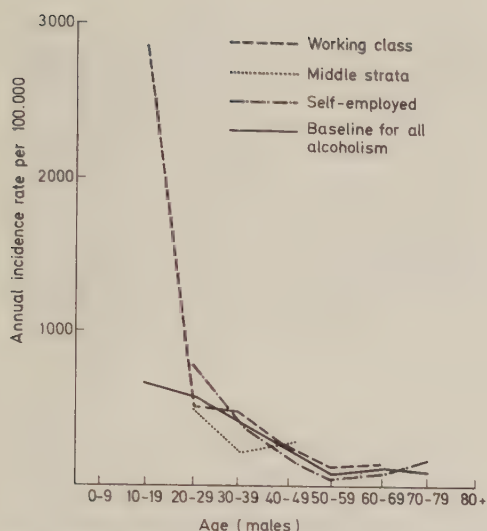


Fig. 1. Annual incidence rate by age, sex (males), and class of developing alcoholism in the Lundby general population cohort based on data from the 15-year period 1957-1972

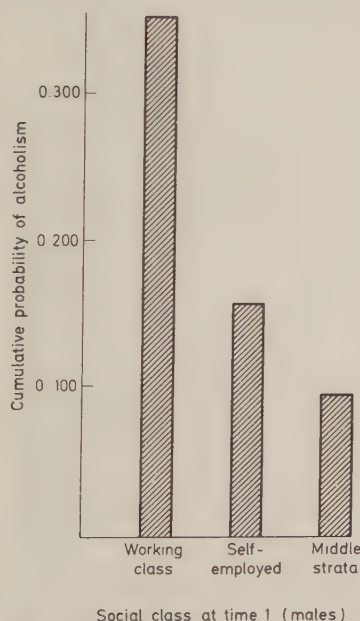


Fig. 2. Cumulative probability by sex (males) and class of developing alcoholism in the Lundby general population cohort based on data from the 15-year period 1957-1972

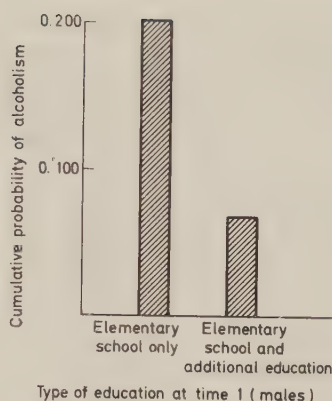


Fig. 3. Cumulative probability by sex (males) and education of developing alcoholism in the Lundby general population cohort based on data from the 15-year period 1957-1972

given as the annual incidence rate per 100,000 persons.

Disease expectancy (morbidity risk) was defined as an estimate of the accumulated probability that a proband would develop the disease in question at some time during his life, if he survived the period of risk for the disease.

Class

Social class was operationally defined from each individual's occupation and type of employment i.e., from the exposure to class experience in productive or labor activities and to the social relationships originating in the production process (Öjesjö 1980a):

1. *Working class* (predominantly manual 'blue collar' workers)
2. *'Middle stratum' employees* (technicians, administrators)
3. *Petit bourgeois* (self-employed businessmen, artisans, and farmers)
4. *Bourgeoisie* (too few in number for a separate statistical treatment)

Some white-collar workers are nonsupervisory and nonmanagerial; hence they are also defined as working class. Nonworking dependents are considered to be members of the class of the 'bread-winners.' For students the father's class was used. If workers were retired, the occupation and role in production they had pursued for most of their working lives was used, and if they were unemployed, the last occupation they had had.

Table 1. The incidence and risk of alcoholism in *working class* males. The Lundby Cohort 1957-1972

Age interval	Observation years while at risk	Cases	Annual incidence rate	Cumulative probability of developing alcoholism
00-09	0.0	0	-	-
10-19	140.1	4	0.0286	0.248
20-29	753.6	4	0.0053	0.287
30-39	1073.2	5	0.0047	0.320
40-49	864.1	2	0.0023	0.335
50-59	953.7	1	0.0010	0.342
60-69	698.2	1	0.0014	0.352
70-79	318.8	0	0.0000	0.352
80+	142.0	0	0.0000	0.352
0+	4943.7	17	-	-
Age standardized			0.0034	

Table 2. The incidence and risk of alcoholism in *middle strata* male employees. The Lundby Cohort 1957-1972

Age interval	Observation years while at risk	Cases	Annual incidence rate	Cumulative probability of developing alcoholism
00-09	0.0	0	-	-
10-19	10.7	0	0.0000	0.000
20-29	199.6	1	0.0050	0.049
30-39	432.8	1	0.0023	0.071
40-49	356.2	1	0.0028	0.096
50-59	287.1	0	0.0000	0.096
60-69	217.0	0	0.0000	0.096
70-79	72.3	0	0.0000	0.096
80+	12.4	0	0.0000	0.096
0+	1588.1	3	-	-
Age standardized			0.0019	

Table 3. The incidence and risk of *self-employed* males becoming alcoholics. The Lundby Cohort 1957-1972

Age interval	Observation years while at risk	Cases	Annual incidence rate	Cumulative probability of developing alcoholism
00-09	0.0	0	-	-
10-19	42.2	0	0.0000	0.000
20-29	507.2	4	0.0079	0.076
30-39	991.9	4	0.0040	0.112
40-49	1040.1	2	0.0019	0.129
50-59	1201.9	1	0.0008	0.136
60-69	960.3	1	0.0010	0.145
70-79	599.0	1	0.0017	0.160
80+	410.0	0	0.0000	0.160
0+	5752.6	13	-	-
Age standardized			0.0023	

Table 4. The incidence and risk of alcoholism in men with only an *elementary school* education. The Lundby Cohort 1957-1972

Age interval	Observation years while at risk	Cases	Annual incidence rate	Cumulative probability of developing alcoholism
00-09	0.0	0	-	-
10-19	1 008.1	7	0.0069	0.067
20-29	2 106.8	14	0.0066	0.127
30-39	2 182.8	9	0.0041	0.162
40-49	2 064.0	4	0.0019	0.178
50-59	2 378.1	2	0.0008	0.185
60-69	1 820.8	2	0.0011	0.194
70-79	946.5	1	0.0011	0.203
80+	555.0	0	0.0000	0.203
0+	13 062.1	39	-	-
Age standardized			0.0030	

Table 5. The incidence and risk of alcoholism in men with *further* education. The Lundby Cohort 1957-1972

Age interval	Observation years while at risk	Cases	Annual incidence rate	Cumulative probability of developing alcoholism
00-09	0.0	0	-	-
10-19	41.3	0	0.0000	0.000
20-29	314.2	0	0.0000	0.000
30-39	395.9	1	0.0025	0.025
40-49	217.0	1	0.0046	0.069
50-59	103.1	0	0.0000	0.069
60-69	83.3	0	0.0000	0.069
70-79	49.1	0	0.0000	0.069
80+	9.4	0	0.0000	0.069
0+	1213.3	2	-	-
Age standardized			0.0016	

Results

Evaluation of the data was organized around the major research questions so that the problems could be assessed, i.e., the risk of developing alcoholism in relation to the social dimension of class. Alcohol dependence and alcohol abuse were handled as a unity in most of the tabulations because of the relatively small numbers, as a division into different degrees of severity would have provided figures too small for statistical treatment (Figs. 1 and 2). Working class ('blue collar') had the highest incidence (approximately an incidence of 340 per 100,000) and the highest expectancy (35.2%) (Table 1). Middle stratum employees ('white collar') had a lower risk (approximately 190 per 100,000, life expectancy 9.6%)

(Table 2). The petit bourgeois aggregate of businessmen, artisans, and farmers had risks somewhere in between (approximately 230 per 100,000, life expectancy 16.0%) (Table 3).

Differences between various educational groups are probably highly related to class (Fig. 3). It was found that youths with no further formal education than elementary school were particularly at risk (Table 4). The estimated morbidity risk (cumulated probability of developing alcoholism) in the elementary school group was 20.3% (alcohol dependence 9.2%) compared with a much lower risk (6.9%) for those with any further education (alcohol dependence 2.5%) (Table 5).

Discussion

Etiological studies in epidemiology are more informative if they report incidence rather than prevalence (Dooley and Catalano 1980; Thompson and Weissman 1981; Murphree 1976). Moreover it has been argued that if alcohol studies are to be predictive, prospective longitudinal investigations are required. Large numbers are needed to represent all the strata of society accurately. A study should begin with preteenagers and follow them long enough to be able to assess fully all aspects of their development and aging—physically, psychologically, socially, and culturally.

Social causation has to do with a number of intervening mechanisms, such as social stress, isolation, alienation, and perceived goal/means disjunctions. In the present study, however, we have concentrated on the *total effects of class*.

When the class-specific incidence rates and expectancies of alcoholism were considered for the Lundby Community Cohort, the risk was found to be highest for the working class, higher than for the petit bourgeois businessmen, artisans, and farmers, and much higher than for the middle strata groups of technicians, administrators, and other white-collar employees. A cautionary note should be added, however, as the age factor (together with the already mentioned relatively small numbers) could confound the interpretation of the results. It is known from population studies in many countries that the risk of alcoholism is different at different ages (as well as for sex). The majority of the alcoholic cases in Lundby had begun to drink at a relatively early age, before 30 in about 60% and before 40 in about 80% (Öjesjö et al. 1983). The age distribution of the working class and the middle strata groups were the same at Time 1. The artisan and farmer cohort tended to be older and might in fact have already passed the most important age periods at risk before the start of

the observation, a bias that of course would give incidence rates that were too low in this particular class.

It is one thing to establish the facts that class and drinking 'cause' alcoholism; to explain *how* this relationship is generated is quite another matter. The first task demands quantitative surveys and statistics and is based on epidemiological and social data, which unfortunately have quite weak correlations (Carlsson 1977; Dooley and Catalano 1980; Wheaton 1978). The second criterion demands information on biochemistry and physiology as well as on qualitative life styles and life history. The latter approach also implies that the mediating processes will be investigated in depth and in detail (Biddle et al. 1980; Burns 1980) and that single cases will be studied (Harré 1980; Sclar 1980). Like the Midtown Manhattan Study, we emphasize the *process*, because it replaces the etiologically ambiguous statics of a single-point-of-time study design with the etiologically suggestive dynamic progression of action-interaction dialectic reaction patterns discernible only in the longitudinal perspective (Kassen Fischer et al. 1979).

Conclusions

The expectancy for alcoholic males in the Lundby Community Cohort was found to be highest for workers, higher than for businessmen, artisans, and farmers, and higher than for white-collar employees. These data prospectively measured in the general population thus support earlier suggestions that class creates alcoholics at different rates by means of the class situation.

It is obvious that alcoholism is not equally distributed in society. Most recent research shows that the largest proportion of heavy drinkers are persons of lower economic status who live in urban areas. Longitudinal studies also suggest that the similar patterns of early school problems, delinquency, drug use, and broken homes predict adult drinking problems (Mello 1981). Moreover, the incidence of young men who are heavy drinkers in the working class has probably now overtaken that of the white-collar groups, while in the older groups the agricultural population has been catching up with the others (Sulkunen 1981). Various research findings thus illustrate that alcohol acquires new social meanings all the time in a changing economy.

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Long-Term Outcome in Alcohol Abuse and Alcoholism Among Males in the Lundby General Population, Sweden

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Summary

The report presents some prospective base-lines for assessing prognosis in alcoholism of various gradations in the general population, each variable measured at the beginning (Time 1) and at the end (Time 2) of a 15 year longitudinal study. It shows an inverse relation between the degree of involvement with alcohol and the time course of the syndrome. Alcoholism as a dependency-syndrome is confirmed to be a valid working model for medical and epidemiological use. The findings also give evidence that future problems can be anticipated on the basis of a few general items.

Introduction

Studies of alcoholics which attempt to define a general population for longitudinal follow-up are rare. Most follow-ups have used a relatively short period of observation (1 to 2 years) and most often they have dealt with clinical samples [1, 2, 3].

Examples of longer time-span investigations are Hyman's [4] 15 year follow-up study of treated clients, and Fillmore's [5] 27 year panel study of drinking habits among students, showing that a great deal might be learned about distinguishing alcoholics from other problem drinkers, and about patterns of problem drinking. Clearly, the longer the period of observation, the greater the opportunity to document the problems.

Gibbin's findings, as described by Schmidt [6], were that 26 per cent of alcoholics in a Canadian community were 'active' after ten years, 23 per cent were 'inactive', 18 per cent had died, and 24 per cent were otherwise lost from the observation. In Gillis and Stone's [7] general population survey, the overall picture was that, with few exceptions, those who were excessive drinkers six years before continued to drink to excess, and those who were social drinkers or abstainers, continued as such.

Large drinking surveys support the view that the alcoholic individuals shift back and forth between addiction and abstinence, though most drinkers never develop any dependency at all, nor show the more severe late drinking signs. No one doubts that continued drinking can damage the drinker, but whether or not the heavy drinking itself is part of a disease process with regular predictable stages is still under debate [8, 9].

The report is based on a paper presented at the Epidemiological section, ICAA 26th International Institute on the Prevention and Treatment of Alcoholism, Cardiff, Wales, 9-14 June 1980.

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The main research questions for the present paper were the following:

1. What had happened to the Lundby alcoholics defined 15 years ago (Time 1)? How many were recovered at follow-up (Time 2)? How many were not recovered?
2. What was the relation between the individual's drinking involvement and the emergence of various types of alcohol-related problems between Time 1 and Time 2?

Procedures

Material

Essen-Möller [10] was the first investigator to describe, medically and psychiatrically, the 2550 persons (1312 men, 1238 women) who on 1 July 1947, were living in the district (the population that now is called the Lundby Cohort). In the late 50's Hagnell [11] added the prospective dimension and personally re-interviewed the population. Information about the deceased persons was also collected. The third and most recent survey was undertaken by Hagnell and collaborators between May 1972 and December 1974, with 1 July 1972, chosen as the cross-sectional measurement point. The nonresponse at the interviews in all three investigations has been around 1 to 2 per cent [12, 13, 14]

The 96 alcoholic men described in the report were originally interviewed and classified as cases by Hagnell in 1957 (for the present purpose called Time 1) and, as the total population, then described concerning their status on 1 July 1972 (Time 2). The average age of the group under study was 47 years (range 18–80) at Time 1 and 57 years (range 37–90) at Time 2. Among these men there were initially 29 artisans and farmers, 10 'white collar' technicians and 57 'blue collar' workers, at Time 2 there were 71 survivors, 17 artisans and farmers, 7 'white collars' and 41 'blue collars.' The occupationally active group decreased from 87 per cent (84 of 96) to 65 per cent (46 of 71) during the period.

Methods

In order to collect and evaluate the information the following methods were used:

(a) Life histories through field notes taken at face-to-face interviews of about 1 hour's duration by the research psychiatrists (O. H. and L. Ö.) and with as many subjects as possible – in most cases including contacts with family members, neighbours and other informants.

(b) 'Clinical' observable behaviour viewed directly at the interview, i.e. current manifest symptoms at Time 1 and Time 2.

(c) Information collected from various relevant registers and agencies (Psychiatric clinics, Health Insurance, Temperance Boards, Criminal Registers).

(d) Final evaluations and classifications based on the total information made by O. H. and L. Ö. (where O. H. also had made most of the Time 1 evaluations). A certain 'cross contamination' between Time 1 and Time 2 evaluations was unavoidable, because in the research we used anyone or all of the sources that were available to us.

The collection and evaluation of data was made as complete as possible. Several sources of information were used, in agreement with Grinker's position that diagnostic acumen is based on the capacity to utilize the essence from *all* sources with which to build a gestalt that is characteristic of a symptom-complex or syndrome currently generally recognised and labelled [15]. The field work took place not only at the subject's place of residence, but many times at the work place, or in hospitals, prisons and other institutions. The interviews were of a relatively free, flexible and open-ended nature, providing information also from the point of view of the subjects, though focused on the psychiatric and medical questions, and on the general life-situations (work, family, home). Efforts were made to get the concrete, externally observable items, but also to know the subject as people rather than as patients, so usually we had the impression that the way they responded to us paralleled the ways that they related to people in general.

Definitions

Alcoholics

Concerning functioning at Time 1 and functioning over the 15 years up to Time 2 the following research criteria were conceived in order to identify the alcoholism syndrome at various gradations of severity [16, 17, 18, 19]:

(a) *Abusers*. (Heavy drinkers, excessive drinkers). In this subgroup of heavy advanced drinkers both the drinking and the interest devoted to alcohol were essential features, even though their involvement with alcohol had caused no clear addictive symptoms. The cut off point vs. 'social drinkers' was necessarily arbitrary,¹ but as minimum criterions of high quantity/high frequency (QF) was accepted information about a more than average consumption of beer and spirits (alcohol intake probably almost every day) as well as repeated acute medical and social disabilities (intoxications, black outs, accidents, temperance board registrations).

(b) *Addicts*. (Drinkers with generalized dependence symptoms). Presence of at least two of the symptoms craving, shakes, drinking to relieve withdrawal symptoms, impaired control, inability to abstain.

(c) *Chronics*. (Drinkers with dependence as well as medical sequelae). This group was excluded from (b) through positive information about cirrhosis, pancreatitis, neuromuscular illnesses, brain damage, convulsions, Delirium Tremens.

Problems

The problem areas have been added because of their importance and simplicity in

¹ Psychiatrists usually agree with each other when they make a diagnosis of alcoholism, and even lay interviewers can make the diagnosis with considerable accuracy. Still there are difficulties of using operational criteria as one has to consider both the maximum case that would be missed, and the minimum case that could be included and then to strike some bargain between the two (Lee Robins, personal communication). Clearly, Edwards and Gross foresaw the complexities of the picture they drew in their article [18]. In defining their use of the alcohol syndrome they stated that not all the elements need always be present, nor always present with the same intensity. ('The syndrome must be viewed as subtle and plastic').

providing information relevant to management and long-term outcome.² From a content analysis of the accumulated information available concerning each case during the entire 15 year period the following problem areas were identified by separate item scales (a through d) [20, 21, 22, 23, 24]:

(a) *Health problems*. Items reflecting medical adjustment and physical complaints (longlasting muscular pains, back aches, severe head aches, gastritis, stomach troubles); frequent sick leaves, hospital stays.

(b) *Job problems*. Job problems measured by subject's work adjustment and employment, e.g. irregular work, work frictions, being fired, unemployed, having an early pension; worries about not getting ahead at work, would have preferred different occupation; strong feelings of estrangement and alienation.

(c) *Family problems*. Reports on problems with the family members (spouse, ex-spouse, children, parents) concerning conflicts and divorce; sometimes even a perceived quality of relationship was noted by the researchers at the home visit.

(d) *Isolation*. Isolation was operationally defined by quality and amount of social contacts with people who would be expected to be more or less emotionally close, e.g. relatives, neighbours, participation in community activities was also considered, as was the fact that those who listed an employer had more possibility of regular social contact on the job than those who did not.

Drinking problems can be more or less severe, but the small number of problem cases available for analysis did make the use of dichotomies necessary. All problem scales used for the study were dichotomised at specified levels of severity: health problems, job problems, family problems and interpersonal isolation. An effort was made to reduce the outcomes of men's drinking problems to numerical scores as a means of systematic comparison when facilitating identifying the follow-up categories. The evaluations refer to estimated current (Time 2) as well as estimated past (Time 1 – Time 2) drinking and problems resulting therefrom. For each problem area a score of 1 was given for 'mild' problems, a score of 2 for a 'moderate' problem and a score of 3 for a serious problem. The main elements when to decide that a person had a problem were by *types* of problem and by *intensity* as reflected by levels of functioning. A high score in a larger number of areas increased the certainty with which we could classify the subject as a problem drinker.³ Details of scale construction are available on request.

² The Diagnostic and Statistical Manual (DSM-III) now currently in use in the States allows coding of a subject on five different axes. Alcohol abuse and alcohol dependence fall on axis I, Clinical Psychiatric Syndromes and Other Conditions. Someone who gets a diagnosis of alcohol dependence or abuse can be simultaneously coded on axis II for personality disorder, on axis III for physical disorder, on axis IV for psychosocial stress, and on axis V for adaptive functioning in the last year. Spitzer RL, Sheely M, Endicott J (1977): DSM-III: Guiding principles, in Rakoff *et al.* (eds). [15].

³ The type of data had to be judged on its apparent meaning 'rather than by applying a prematurely stereotyped test based on insufficient knowledge' (Knupfer) and here the detailed life histories were very useful when the cutting points had to be drawn. Thus if one asks about amount of drinking or trouble with spouse, the researcher must first ask himself whether he is satisfied that a respondent answering in a given way can be assumed to have a drinking problem; and then he must rate the severity of the problem [20].

Results

1. Recovery vs. Non-Recovery at Time 2

The outcome results of the study are shown in Table 1. Thirty per cent (29 of 96) of the Lundby alcoholics were recovered at Time 2, 43 per cent (42 of 96) were unchanged or worse and 27 per cent (25 of 96) had died. The heavy drinkers ('the abusers') had a more favourable outcome than the other subtypes. Of 49 abusers from Time 1 25 (51%) were in remission at Time 2, 14 (28%) were not recovered and 10 (21%) had died. Four abusers were roughly unchanged and 10 had signs of further deterioration.

Four of 29 (14%) addicts were in remission at Time 2, 18 (62%) were not recovered and 7 (24%) had died. Eight addicts were unchanged, another 4 had probably decreased their drinking though still high and 6 had signs of increased alcohol involvement at Time 2.

Not unexpectedly the worst outcome was found among the 18 cases who had been classified as chronics already at Time 1. *None* was recovered at follow-up, 8 (44%) were unchanged and 8 (44%) had died. In other words, 8 of 18 chronics were unchanged concerning the severity of their alcoholism, and 2 of 18, though not to be classified as chronics at Time 2 (and perhaps even wrongly so at Time 1), still had the dependence signs. Obviously the results are consistent with Gillis and Stone's [7] general population findings that the patterns of advanced drinking are remarkably stable over the years.

Table 1 Classification of the Lundby 1957 (Time 1) Male Alcoholic population by outcome at follow-up 1972 (Time 2). N = 96

Categories at Time 1 by outcome at Time 2						
Time 1 categories	N	Deceased at Time 2	Remission of the same category by Time 2	Present Abusers at Time 2	Present Addicts at Time 2	Present Chronics at Time 2
1. Abusers	49	10	25	4	3	7
2. Addicts	29	7	4	4	8	6
3. Chronics	18	8	0	0	2	8
All	96	25	29	8	13	21

Twenty-five men had died during the period between Time 1 and Time 2. It is noticeable that the majority, 21 of 25 (84%), had reached an age of at least 65 at time of death. Most frequent causes-of-death were cardio-vascular (54%), sudden death (16%), gastro-intestinal (16%) and infections (14%). Among the 4 sudden deaths there were 3 suicides – 2 definite and 1 probable, the last mentioned case a man of 19 who had been found drowned at sea. Although the number of deaths is small the general pattern is similar to findings in other investigations, e.g. the mortality among alcoholics results mainly from accidents, suicides, heart diseases, cancers and pneumonia.

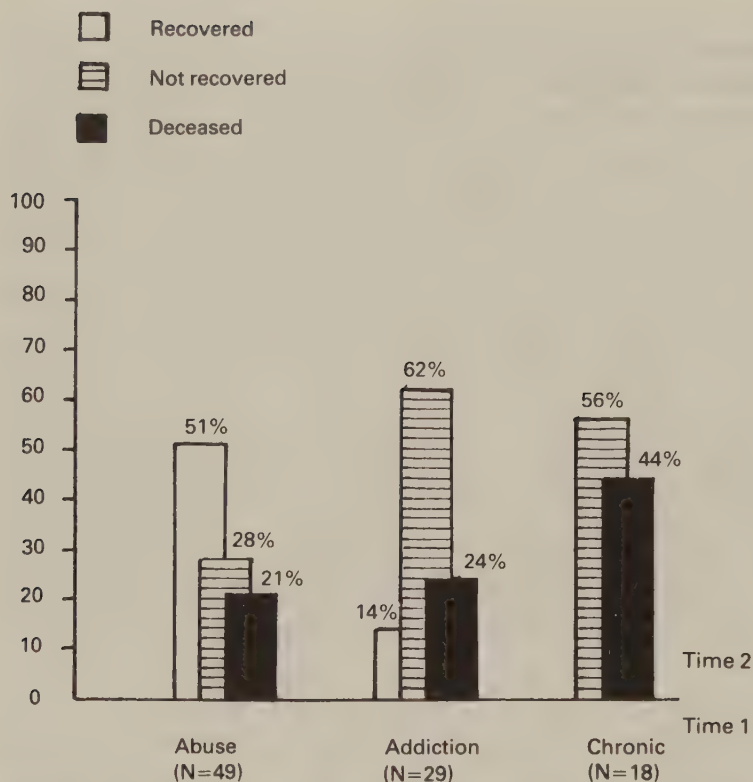


Figure 1. Classification of the Lundby 1957 (Time 1) male alcoholic population by outcome at follow-up 1972 (Time 2).

2. Alcohol-related problems at Time 2

The data were collected in sufficient detail to describe much of the complex nature and pattern of outcome, and total recovery and alcohol abstinence was not demanded as an absolute necessity for a favourable prognosis. The term 'improved' was instead introduced to provide a broader characterisation of the group that was believed had greatly reduced their drinking at the time of follow-up. Good prognosis/improved involved an estimated real shift to the less severe drinking patterns, and poor prognosis/deteriorated was used if the shift was vice versa.

Those with poor prognosis tended to be older (average age 49 years at Time 1) than those with a favourable outcome (average age 46 years at Time 1). The findings indicate in other words that those who got out of trouble over the 15 years of the study, on the average, were slightly younger. Particularly in the less severe category (the abusers) it was found that the younger the subject, the higher the likelihood of improvement (improved – average age at Time 1 33 years, deteriorated – average age at Time 49 years).

The main reasons given for decreased drinking were a complicating physical illness (36%), less social problems (36%) and 'other reasons' (28%). Physical health problems were commonly observed in both outcome groups, as 85 per cent of the poor prognosis drinkers had symptoms of physical ill health vs. 71 per cent of the

improved.⁴ Family problems, however, were much more common among the not improved group (52 per cent vs. 23 per cent), as well as estimated interpersonal isolation (57 per cent vs. 19 per cent), the latter finding hinting that in our society the size of an individual's network of primary social relations decreases as the severity of alcoholism increases [25]. In general, our impression was that those with the more severe diseases were also in the greatest general distress, though the 'problem profile' could look somewhat different for the subtypes. The abusers had problems particularly with family and jobs, while isolation and exclusion from the labour market was characteristic among the chronics. The addicts seemed to take an intermediate position.

The relation between work ability and involvement with alcohol was indeed very obvious. Only 50 per cent (8 of 16) of the chronics aged 25–65 were employed at Time 2, and they all had poor work records. The findings support Negrete's [26] view that the occupational record is of primary importance in any assessment of the disability caused by alcoholism.

Table 2 Employment and Type of alcoholism for 46 Lundby males aged 25–65 years at 15 year follow-up

Time 2		Per cent employed (n = 46)
Abstinent	(n = 20)	100
Abuse	(n = 3)	100
Addiction	(n = 7)	86
Chronic	(n = 16)	50

Discussion

The outcome results were predominantly organised into broad categories involving the more obvious qualitative dimensions. In a clinical short-time study such variables would perhaps seem too simple, but over the years they may trace the major patterns. The great advantage of the prolonged study is that the subjects can serve as their own control. Another advantage is that the accumulated evidence provides real proof of recovery. The longer the time period, the more likely the investigator is to obtain a full picture. Thus the long-term view permits major patterns of an individual's life to emerge – patterns that are lost in the fine detail of a cross-sectional study. Although the entire career of any given 'alcoholic' contain uncertain periods during which knowledge of drinking or abstinence depend upon circumstantial evidence, the overall pattern was believed to be only minimally distorted by such uncertainties [23, 27, 28, 29, 30, 31, 32].

The findings imply that general trend predictors for a *poor* prognosis in alcohol-related disorders can be arranged in the following order: severity of alcohol involvement most important, then age, work and interpersonal relations. The

⁴ The result of a self-administered medical questionnaire distributed to the Lundby population in 1962 has shown that alcoholics consistently report more symptoms of both mental and physical disorders than non-alcoholics. Hagnell O & Tunving K: (1972) Mental and Physical Complaints Among Alcoholics. *Q. J. Stud. Alcohol*, **33**, 77–84.

variables may be expected to interact with one another and with others as well (heredity, family-, class- and cultural background) in vicious spirals over time [33, 34, 35, 36, 37]. Predictors for a *favourable* prognosis would be the ability to abstain from alcohol, emotional and social stability, and particularly a satisfactory combination of work and interpersonal adaptation [38, 39, 40, 41].⁵

The advanced cases were generally known to the Temperance Boards and to the Psychiatric Clinics [14]. There was no specific treatment intervention to which the alcoholics were subjected as a group at any time over the 15 year period and none reported intensive treatment. Hence our data can be taken to represent outcome from only limited treatment, implying that treatment programs claiming to be effective should be required to demonstrate more improvement than could be shown in this sample [42, 43, 44].

Conclusion

This prospective study has confirmed many of the findings of previous research. Evidently the more intense the individual's involvement with alcohol the more his behaviour will be determined by it. The findings also indicate an increasing tendency for problems to go together with time. Indeed, past drinking problems are predictors of future problems. More generally: Among the best predictors of behaviour is – behaviour [45, 46, 47].⁶

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⁵ Samples of older alcoholics also demonstrate that there appears to be a relatively high rate of 'maturing out' of alcohol problems for those who survive into their seventh decade. [39].

⁶ In the last resort all diagnostic concepts stand or fall by the strength of the prognostic and therapeutic implications they embody. The ability to predict what is going to happen, and to alter this course of events if need be, have always been the main functions of medicine. These predictions may concern any aspect of prognosis: response to particular therapeutic agents or measures, the development of characteristics or behaviours which were not present at the time the diagnosis was made, mortality, the ability to leave hospital or return to work, and so on. In a sense, this is a question of homogeneity as useful predictions can usually only be made if most members of the category behave in the same way [45].

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